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ABSTRACT

This report is the result of a year of research on a number of options available to individuals who will ultimately find themselves responsible for dissemination of metric information to educators and consumers. This document was prepared by the American National Metric Council (ANMC), an organization founded in 1973 by representatives of private industry and designed to serve as the planning and coordinating forum for voluntary metric conversion in the United States. Sections in this report include: (1) a brief history of metrication in the United States; (2) information about metrication in Canada, Great Britain, and Australia, three countries in the process of converting to the metric system; (3) selected brief reports on consumer-oriented and education programs in this country, including brief recommendations by ANMC; (4) a summary of recommendations; and (5) a select bibliography. The 10 appendices include information about ANMC, an Advisory Committee membership roster, a media survey on metric coverage, project correspondence, Interstate Consortium on Metric Education (ICME) recommendations, and additional material related to the project. (MP)

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METRIC INFORMATION DISSEMINATION PROJECT FOR EDUCATORS AND CONSUMERS

NIE-G-78-0221

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The American National Metric Council is pleased to submit the final report of Grant NIE-G-78-0221, the "Metric Information Dissemination Project for Educators and Consumers" to the National Institute of Education.

The research for this project was conducted before the creation of the Department of Education; we feel that the development of this department will place newer and greater emphasis on metric education in our schools. It is our hope that the Department of Education will give serious consideration to this report and will investigate, expand and implement the recommendations contained herein.

Finally, due to a number of key staff changes during the course of the project, the final report reflects a slight change in methodology and research from that of the proposal. This change of course is inevitable, given the change of personalities and philosophies, however the research was guided and approved by the Advisory Committee and the Project Officer.

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INTRODUCTION

The American National Metric Council was founded in 1973 by representatives of private industry, in order to serve as the planning and coordinating forum for voluntary metric conversion in the United States. By working with interested sectors of the economy, ANMC assists sectors to identify issues surrounding metrication, discuss opportunities and barriers, and plan for a cost efficient and smooth transition to use of the metric system in this country. As part of its mandate, ANMC works to ensure that all interested and affected parties are involved in the process of metrication, including consumers, educators, labor, government and small business.

"Sector committees - concerned parties meeting under the auspices of ANMC to plan for conversion"[1] - are the heart of ANMC's organization (See Appendix 1 - ANMC Operating Plan). Intersector communication is accomplished through Coordinating Committees, which consist of sector committee officers. Communication between committees is further encouraged by the Steering Committee, which is composed of Coordinating Committee chairs, and the chairs of Operations Committees.

ANMC committee members have recognized from the inception of ANMC that metrication must have the goodwill of the consumer who, ultimately, will have to function in a metric marketplace.

[1] American National Metric Council, 1978-1980 Operating Plan, p.3

It was recognized that the consumer must be represented in the early stages of planning for metrication, and in this spirit, the Consumer Liaison Committee was developed in 1976. The Consumer Liaison Committee (see Appendix 2 - membership of the Consumer Liaison Committee) is comprised of representatives of Federal, State and local offices of consumer affairs, private industry and various other general interests, and consumer organizations, with the goal of providing a broad base of consumer input in metric planning. The Consumer Liaison Committee keeps consumers and consumer organizations up to date on metrication through publications (A Metric Reference for Consumers, Metrication and the Consumer: Avoiding Deception in the Marketplace, and Metrication and the Consumer: Planning for Practical Metric Packaging) and a quarterly newsletter, the "Metric Messenger for Consumers" (See Appendix 3). As a general informational tool, ANMC publishes the "Metric Reporter" bimonthly.

The Education and Training Coordinating Committee was one of the first coordinating committees to be established within ANMC, and is made up of sectors covering a broad range of disciplines. (See Appendix 4 - ANMC Organization Chart). In 1977, the Educational Materials Sector published the Metric Guide for Educational Materials, which was distributed to a number of publishers and all school districts in the United States by the National Institute of Education.

The Vocational Education Sector is currently preparing a document which deals with metric conversion in vocational education. Publication of this document is expected by December, 1980. Other education sectors are planning for metric conversion in Employee Training and Engineering Education. ANMC participates regularly in the Metric Education Information Committee, an informal group which meets regularly to exchange information on metric education within the various disciplines. Participation in the committee is broad based and includes representatives of Federal and State governments, private organizations and educational associations.

Both the Consumer Liaison Committee and the Education and Training Coordinating Committee work with issues that are national in scope and will affect a large segment of the population of the United States. As plans are developed and metrication is implemented, it is imperative that information be disseminated on a wide scale to the affected parties, which in this case, are educators and consumers. Metrication in the United States will be successful when educators and consumers, who will deal daily with SI, accept the change.

The American National Metric Council was awarded a grant by the National Institute of Education to determine methods for disseminating metric information to educators and consumers, to examine existing information systems for their appropriateness and to suggest new information systems which may be developed to aid in the dissemination of metric information.

METHODOLOGY

The following report is the result of one year of research and study of a number of options available to those who will ultimately find themselves responsible for dissemination of metric information to educators and consumers.

The Advisory Committee (see Appendix 5) and Project Staff have attempted to answer the question "What are the best ways to disseminate metric information to educators and consumers?" Project Staff researched the ways in which consumers and educators have traditionally received information, and how these already existing information systems can be applied to metric information. It was the intent of the project to research those elements of existing information systems which could be utilized specifically for the dissemination of metric information.

In order to present the best options for dissemination of metric information, numerous individuals, organizations, companies, federal agencies, educators and consumer organizations which had dealt with the problem of disseminating information were contacted. Documentation of Project correspondence is attached to this report. Experts in the field of communications and information systems were consulted; their ideas and suggestions are incorporated in this report. Project Staff visited sites and examined existing programs in order to gauge consumer and educator reaction, and

judge the validity and effectiveness of the program. Specifically, research included visits to shopping mall exhibits, community awareness projects and an examination of computer technology.

This report is designed to present a reference document of useful ideas, programs, and recommendations for community groups, educators and consumer organizations, i.e., those who will undertake the task of metric education in the schools and of the general public.

In view of the fact that the needs of educators and consumers may differ, the report is divided into separate sections for each group. The educator will need to be knowledgeable and comfortable with almost all SI* metric units, whereas the average consumer will need to know just the basic units and several prefixes.

The Advisory Committee discussed at length the basic question of awareness and knowledge. Knowledge of the metric system will be crucial for the consumer at the point of purchase in a marketplace that is essentially metric. Prior to this time, the consumer needs to be aware that metric conversion is taking place, and why it is taking place. By educating the consumer in the benefits and advantages of metric conversion, and raising awareness of the rationale behind conversion, consumer acceptance of metric conversion, and motivation to learn the system, increase.

* Throughout this document SI refers to the "Système International d'Unités'", the modernized metric system.

Educators need to be aware of the benefits of metric conversion in order to establish commitment to developing strong metric curricula. All educators need to know the system in order to provide constant and consistent metric training to students at all levels. The problems of inconsistent application are discussed later in this report.

It was not within the scope of the Project to question whether or not the United States will convert to the metric system, nor to provide the rationale for conversion. Further, the Project will not make a judgment as to which organization or groups of organizations will be responsible for a massive public metric education campaign; rather it is assumed that organizations of consumers, communities and educators will become increasingly involved in this effort.

So as not to limit the number of ideas and recommendations, the Project has not been concerned with costs of any programs recommended herein. Certainly there are cost/benefit factors which should be analyzed, however this particular aspect is not within the scope of this project.

The vast amount of metric educational materials which exists is an indication of the commitment to metric conversion in general. Some of these materials are excellent teaching tools, others are of questionable value. The Project did not attempt to evaluate any of the materials; this is a task better suited for a large group of education and metric experts.

HISTORY OF METRICATION IN THE UNITED STATES

The history of the metric system of measurement in the United States is nearly as lengthy as the country is old. President George Washington recommended that the Congress develop a decimal system of measurement for commerce and trade about the same time that France was in the process of adopting the meter as its standard unit of linear measure.

Since the first Continental Congress, many suggestions were put forth and studied but no concrete action by government was taken until 1866 when Congress authorized the use of the metric system in all transactions, domestic and foreign. In 1875, the United States joined with sixteen other nations in the Treaty of the Meter and became an active participant in the development of the use of metric measures through a strong international cooperative venture.

In 1893, inch/pound measures were defined in terms of metric standards and the use of the metric system grew with our country's involvement in the commerce and scientific endeavors of the rest of the world.

The U.S. Department of Commerce three year "U.S. Metric Study", authorized by Congress in 1968 and delivered in 1971, was the next major action and did much to convince our law-makers that the time for metric conversion had arrived. The metric system was in use in many areas of our economy and the

number of non-metric nations had decreased. The growth of metric usage was such that 96% of the world's population was using this measurement language and all of the English speaking nations, except the United States, had committed themselves prior to 1975. Liberia, Brunei, Burma. and the two Yemen republics were the only remaining non-metric nations as of 1975 when the Metric Conversion Act (P.L. 94-168) was signed into law by President Ford and passed by the 94th Congress.

The Metric Conversion Act of 1975 is a voluntary act, leaving the major impetus for change to affected parties. The transition is to be accomplished when it is economically feasible and in a cost-effective manner. The act also created the United States Metric Board (USMB) to help coordinate the changeover.

The general public, for the most part has been unaware of metric conversion and it is becoming evident that there is an increasing need for public awareness on a broad scale, and in a coordinated fashion.

THE INTERNATIONAL METRIC SCENE

As a preliminary research task, the project examined reports on metrication from Canada, Great Britain and Australia. These three countries are in the process of converting to the metric system, and have the potential to provide guidance to the United States' effort. Close monitoring of metrication in other countries offers those involved in the United States the opportunity to avoid pitfalls in the future. There are differences in national character, enforcement power of metric officials, economic complexity, and size considerations between nations; however, the experiences of and recommendations from these countries should be kept in mind by those developing metric programs in the United States.

CANADA

Educators

In Canada, metric education in the schools has been monitored by teacher surveys conducted in 1974 and 1977. These surveys gave Metric Commission Canada an indication of teacher attitudes toward teaching the metric system and the availability of metric materials. As education in Canada is primarily a provincial responsibility, Metric Commission Canada faced the same situation as metric authorities in the United States: national coordination of state/provincial programs. Coordination is necessary in order

to eliminate the variance in metric education, specifically in the primary and secondary realms, which exists from province to province or, as in the case of the United States, from state to state.

Those studying metric education in Canada recommend the establishment and maintenance of strong communication links between metric authorities and educators early in the conversion process with newsletters and other reports.

An integral part of the acceptance and success of metric education in Canada is the gaining of parental and community support for this using handout materials and special information campaigns.

Reports from Canada emphasize the need to update metric instructional materials in order to provide consistency, and to overcome administrator and teacher hesitancy to teach metrics using campaigns to encourage metric awareness in the educational community. In order to accomplish this goal, Metric Commission Canada held seminars throughout the country using materials prepared by the Commission.

The provinces varied in their approach to metric education; some choosing to make the transition gradual; others opting for a "blitz" approach. A study conducted by the American Institutes for Research indicates that comparative effectiveness data for the two approaches is lacking.

Consumers

In order to prepare Canadian consumers for metric conversion Metric Commission Canada employed, and continues to promote, calendars, posters, cartoons, and other informational materials. Consumers have access to these free materials by contacting Metric Commission Canada. Consumers in Canada are also exposed to exhibitions, metric booths at trade fairs and metric exhibits at shopping centers. Metric Commission Canada recommends the establishment of early ties with and commitment from the media, as the mass media can be expected to reach a large majority of consumers.

Canada faces a unique problem in its metric conversion program; a large percentage of the Canadian economy is dependent on the economy of the United States. The slow pace of metric conversion in the United States has affected Canadian programs in a number of industries.

GREAT BRITAIN

Educators

In Great Britain, metric information for educators was disseminated by Teacher's Centres Workshops. The workshops used a "hands-on" approach to familiarize teachers with SI and to alleviate any fears which the teacher might have about metric conversion. Teachers came from various districts to

a centralized Teacher's Centre and were expected to conduct their own workshops upon return to their districts.

Consumers

British metric authorities, like their counterparts in Canada, strongly recommend the use of media campaigns to inform consumers about metric conversion. Citizens Advice Bureaus and Consumer Advice Centres disseminated metric information to consumers nationally, and a metric exhibit toured shopping centers, museums and national conferences.

Introduction of metrics to the general public in Great Britain commenced shortly after the program to decimalize currency.

RECOMMENDATION:

Metric conversion should not be linked to any other type of change, as resistance to change is a very strong force which increases proportionately with the amount of change. This statement is especially applicable to price increases occuring with metric conversion.

AUSTRALIA

Educators

In Australia, education authorities used the already existing system of school inspectors and advisory teachers to disseminate metric education information. The Australians adhered to the British philosophy of using a core group of resource teachers to educate other educators in metric conversion. Metric authorities in Australia further recommended that priority in metric instruction not be limited to teachers of math and science, and that an overall system of teacher training be developed, rather than sporadic incidences of workshops and training sessions for teachers. The Australians point out in their literature that the needs for teacher education and adult education may, in some cases, be similar.

Consumers

The Australian Metric Conversion Board mailed 4.3 million copies of Metric Conversion and You to households in Australia, issued four postal stamps with metric conversion as the theme, and used Public Service Announcements and other media tools to reach consumers.

Research into annual reports from the Australian Metric Conversion Board provided Project Staff with the following recommendations:

RECOMMENDATIONS OF AUSTRALIAN METRIC CONVERSION BOARD :

Efforts to educate consumers should emphasize the simplicity of the system, provide reassurance to consumers and stimulate confidence and familiarity with the system.

Convert segments first which have impact on the public such as horseracing and weather reports.

The small retailer has the advantage of more personal contact with the consumer. This relationship can be used advantageously to allay fears of consumers.

Manufacturers should publicize and clearly identify product conversions; avoid attempting to slip them in unnoticed.

Conversion cards should be sparsely distributed so as not to prolong a dual system period.

CONSUMER PROGRAMS

This section of the report provides information that has been gathered about a number of programs aimed at disseminating information to consumers. Specific recommendations for educators appear in the next section.

A general trend in programs which attempt to educate the public is the lack of evaluation components. There are numerous difficulties involved in determining statistics for the percentage of the population affected by a program and assessment of changes in attitudes brought about by a program.

RECOMMENDATION:

Programs developed to disseminate metric information should consider some type of evaluation in order to determine whether the program should be repeated and/or applied to other areas which require broad public education campaigns.

Involving the public in planning for education and information programs is a positive method of gaining acceptance for metric conversion. The Consumer Liaison Committee has worked with this concept in mind since its inception, and strives to involve consumers in actual conversion planning.

The consumer who is involved in conversion planning and the formulation of consumer metric information programs has the opportunity to create programs suited to his/her needs. The point here is to avoid second guessing consumer informational needs; go straight to the consumer for input.

The cooperation of national consumer groups will guarantee a successful public awareness program in metric conversion. These groups were formed to represent the public at large and are traditionally looked upon as a source of information and education about issues that affect the consumer. The constituency of many of these groups is the consumer, and working with these national consumer organizations offers a direct method for the dissemination of metric information to consumers.

However as of the writing of this report, organized groups are largely disinterested in the topic of metric conversion. With such issues as energy and food prices to deal with, it is not surprising that metric conversion is a low priority for national consumer organizations. As the marketplace becomes increasingly metric, every effort should be made to gain increasing support and interest of consumer activists and organizations.

RECOMMENDATION:

A concerted effort should be made by those involved in metrication to involve consumer and community groups in the process. By actively pursuing input from consumer and community groups, metric conversion will gain the interest and support of these groups, and will become a priority issue.

USE OF THE MEDIA

According to the Radio Advertising Bureau, 81% of the adult population of the United States is reached by radio daily; according to Nielson statistics, 76% of the same population is reached daily by television; and according to the Audits and Survey Research Company, 69% of the same population is reached daily by newspapers. These statistics support the conclusion that the media constitute the most far reaching information system.

MeasureMetric, a series of twelve fifteen-minute programs produced by the Agency for Instructional Television, was examined by the Project staff. A number of areas where the series was shown were contacted and all involved indicated that the show was a great help to both teachers and students. MeasureMetrics is available from the Agency for Instructional Television in Bloomington, Indiana.

Project staff talked with Richard Wright, Vice President and General Manager of Radio Station WTAG in Worcester, Massachusetts. Mr. Wright developed the "Metric Monday" series for WTAG, a project which involved broadcasting temperatures in degrees Celsius only, every Monday. Listeners of WTAG were informed of the experiment and the station received much mail

and many calls, expressing opinions ranging from enthusiasm to adamant opposition. Mr. Wright indicated that adverse listener reaction decreased as time went on; however, he lost one advertiser because of "Metric Monday".

"Metric Marvels" is a series of two-minute animated films produced by Tom Yohe and George Newall. These films were aired by NBC on Saturday morning, and presented a light, musical approach to metrics.

In 1974, The Maryland Center for Public Broadcasting produced a series of twenty one-minute television spots. "Measure for Measure" deals with the basic elements of the metric system in a humorous manner. The series has been distributed nationally.

In February of 1977, Jane Keely, Vice Chairman of ANMC's Consumer Liaison Committee, conducted a survey of newspaper and magazine editors, television and radio announcers. A copy of the survey, which determined the use of the metric system and the presentation of metric information by the media, is attached to this report (See Appendix 6). The survey was mailed to 365 newspapers, magazines, radio and television stations. Eighty replies (22%) were received; respondents represented an audience of 60 million persons. Eighty six percent of the respondents indicated that they had at one time or another included metric in their programming, and 28% indicated regular use of metric measures in scientific reports, in recipes and food-related stories, or both.

More recently, the National Association of Broadcasters polled their members on a plan to convert weather reporting to metric units. In January, 1978, the survey was sent to station management and meteorologists, asking them to identify their metric informational needs, and to comment on the proposed conversion plan of the National Weather Service. A total of 407 radio and television stations responded to the survey; 86.2% responded positively to the National Weather Service Plan. Respondents indicated their need for up-to-date information and education on metric conversion, in order to educate their audiences.

These surveys indicate that media support for and involvement in metric conversion exist; however, a program for the media must be coordinated and well planned.

RECOMMENDATION:

Increased use of the media to disseminate metric information is essential for the successful metric education of the general public.

RECOMMENDATION:

Organizations involved in metric conversion should develop Media Advisory Committees in order to facilitate correct and consistent metric usage by the media.

COMMUNITY AWARENESS PROJECTS

The Project investigated a number of community awareness projects. One such project was the "Metrication of Watertown (MA)" grant program. This particular program grouped together the town libraries and school system in order to impact as much of the community as possible. The Watertown Project staff developed teaching materials for use in the school system and conducted in-service training programs for teachers. As an incentive, the teachers received one credit for attendance at the workshop and were expected to disseminate metric information within their schools. These workshops used a "hands-on" approach in order to familiarize teachers with metrics and increase their ability to be at ease with and use the metric system.

The Watertown Project involved the public libraries in order to reach people who would not ordinarily have contact with the schools. The libraries collected and catalogued metric materials and publicized their availability to the public. Users of the libraries were able to check out metric materials including texts, manipulatives and measuring equipment. One night a week was designated "Metric Night" at the library; workshops were offered and, according to the Watertown Project Director, attendance was high.

Several novel approaches were used to educate the general public. Among these were precinct parties, where one person would invite friends to a home for a workshop taught by one of the Watertown Project staff. A Metric Poster Contest was held in the schools and the prize winning poster was publicized in the local media. A Metric Fair was held for children while a Metric Happy Hour was held for adults. Adult education courses were offered in metrics including courses in cooking, sewing, and auto mechanics. Watertown was also involved with the National Council of Teachers of Mathematics' "National Metric Week." Programs were presented at the Mall every afternoon; poster displays, movies and puppet shows were held, refreshments were made with metric measures.

The Watertown project attempted to reach special interest groups as a part of its overall community approach. Two teachers from the Perkins School for the Blind developed a metric workshop for teachers of visually handicapped children. Project Staff in Watertown enlisted the aid of bilingual adults to teach metric workshops in the schools with large bilingual populations. The Watertown Project Director reported that these workshops may not be necessary as many bilingual students are originally from countries which are metric.

The Metrication of Watertown is an example of a successful community awareness program for a number of reasons. The requests for metric materials from the library increased significantly,

attendance at workshops was high and a survey conducted at the end of the project indicated that community awareness and knowledge of metrics were generally higher than at the outset of the project.

Watertown is a community of approximately 38 000 inhabitants in an area that is approximately 10.4 km^2. The success of this project may be attributed to the size of the community, the cooperation between the school system and the library system and the tremendous support of the media.

RECOMMENDATION:

Future community awareness projects should be designed with the demographics of the community in mind. The concept of introducing the entire community, rather than specific sections of the community, to the metric system is an admirable one, but one which may only be applicable to smaller communities where support of the entire community and the cooperation of the media are attainable goals.

In the community awareness project discussed above, the community was relatively small. In the case of larger cities, future community awareness projects may need to target specific populations, rather than attempting to educate the entire public at one time.

RECOMMENDATION:

As discussed above, there may be no need to develop special materials for the bilingual population in cases where they are familiar with the metric system. However, this should be researched in the individual community. Bilingual school children and their parents could be used as "metric resources" in the schools and in the community.

Within any community, there exist populations with special needs. As previously stated, the Watertown Project developed programs for the visually impaired, and researched the problems of the bilingual community. Senior citizens, who constitute a large population in many areas, should be considered in any community awareness programs.

A 1978 report from the General Accounting Office offers the following figures:

Views on converting to the metric system	AGES 18 to 29	30 to 44	45 to 59	60 and above
Support	41%	31%	20%	28%
Oppose	46%	58%	66%	58%
No opinion	13%	11%	14%	14%
Total	100%	100%	100%	100% [2]

[2]General Accounting Office, "Getting a Better Understanding of the Metric System--Implications If Adopted by the United States, 1978, Chapter 27, Page 8.

RECOMMENDATION:

Just as is the case with any special interest group, community educators may find that the resources of senior citizens can be used to provide metric education in the community. Future community awareness projects should consider using the experience and skills of the elderly in a teaching role.

SHOPPING MALL EXHIBITS

The project researched a number of metric shopping mall exhibits. These projects, particularly those that travel to a number of malls, have the potential of reaching large audiences. These exhibits are primarily tools for raising awareness, although they do have the potential to provide metric education and take-home materials. Very little evaluation was conducted on any of these projects, therefore it is difficult to determine their success. Exhibits that are set up creatively and imaginatively can serve to draw the consumers' attention and present information in a relaxed and anxiety-free environment.

Shopping mall exhibits may be as simple as handing out pamphlets or as complex as a complete "hands-on" workshop.

Project Staff visited "Metric City" which was on display at the Longview Mall in Longview, Texas. This particular display was a hands-on workshop where attendees were encouraged to weigh fish at the "metric fish store", buy gasoline at the "metric gas station" and measure their height at the end of the tour. Tours were conducted by local Girl Scouts, and letters were sent to all school principals in the Longview area encouraging class trips to the exhibit.

At the end of the tour, a pamphlet was distributed with spaces to be filled out by the participant for weight and height. (Unfortunately these pamphlets and the exhibit itself contained many conversion factors and problems to be solved by the

participant; this type of activity can serve to frustrate the participant, and creates a false impression that metric involves complicated equations and mathematics.)

RECOMMENDATION:

Metric shopping mall exhibits should be set up to solicit the attention and interest of shoppers and should include reference materials.

RECOMMENDATION:

Metric shopping mall exhibits should be staffed by people who are knowledgeable and comfortable with the metric system so as to pass this comfort and ease on to the shopper.

RECOMMENDATION:

Displays in shopping malls are capable, by nature of their location, to present short lessons in metrics. These lessons should be as simple as possible, and should not involve the use of conversion factors.

RECOMMENDATION:

Public displays for metric information should not be limited to shopping malls. Other possibilities are: lobbies of banks, public libraries, office buildings parks and other public areas.

COOPERATIVE EXTENSION SERVICES

The activities of cooperative extension services are national in scope; communication between the services is accomplished by a very effective hierarchy of coordination which is headquartered at the U.S. Department of Agriculture in Washington, D.C. All land grant universities in the United States offer Cooperative Extension Services, and these agencies are very much involved with community and adult education.

Several metric programs have been developed by local Cooperative Extension Services, including a metric newsletter offered free of charge to communities in New Jersey, and an exemplary program developed in Florida.

Correspondence was initiated and maintained with Mary Harrison, Home Economist Specialist at the University of Florida who developed a metric study-at-home course. The course was very popular; in one year 27 500 Floridians used the course. Incentive was provided by a Continuing Education Unit given through the University of Florida.

The Consumer Liaison Committee has utilized the information network of Cooperative Extension Agents to disseminate publications, particularly the "Metric Messenger for Consumers", a quarterly newsletter. Distribution of the newsletter through the Cooperative Extension Services has resulted in many requests for the newsletter by individual consumers indicating that this particular information

system is an effective way to disseminate materials and information to consumers.

RECOMMENDATION:

Organizations wishing to distribute information to consumers should consider utilizing the information system of the Cooperative Extension Services. Coordination is best achieved through the Washington, D.C. headquarters of the Cooperative Extension Service within the U.S. Department of Agriculture.

GROCERY STORE OR SUPERMARKET PROJECTS

"One out of five consumers dollars is spent on food, and the average consumers shops at least once a week for food;"[3] therefore, the consumer will undoubtedly meet the metric system in the grocery store or supermarket.

> RECOMMENDATION:
>
> Extensive efforts should be made to inform and educate the consumer in the marketplace, specifically in grocery stores and supermarkets.

The possibility of computer applications for this type of activity was researched; the advantages of this type of program would be the development of a national system to keep consumers informed about metrics, and the capability to produce materials in the marketplace which the consumer could then bring home and keep for future reference. This type of program could be developed regionally or nationally; and it could feed back statistics on use of the equipment and provide information as to which questions are being asked most frequently. This capability provides a built-in evaluation of the program.

[3] American National Metric Council, Metrication and the Consumer: Avoiding Deception in the Marketplace, 1977, p.13.

One key person in the store could be trained to monitor the equipment, and all store personnel could be trained in metrics by the system so that they could provide accurate point-of-sale information to the consumer.

RECOMMENDATION:

By developing a series of lessons on cassettes and disseminating them to the stores involved, metrics could be taught in a timely and orderly fashion.

Any equipment used could be tailored to be site-specific, and this type of program has the potential to be used for the dissemination of any type of consumer information, not just metric information.

The project investigated "The Source", a system of computer programs developed for consumer use by Capitol Telecomputing Corporation. "The Source" provides information on subjects ranging from real estate to wine tasting. The system also includes games, a tie-in with United Press International and educational programs. A listing of "The Source's" applications are attached to the report (See Appendix 7).

"The Source" is designed for use by those who know little or nothing about computers and is extremely easy to operate. "The Source" is also designed for use in the home and requires minimal equipment (a computer terminal and a telephone). Use of the home to present metric information provides an anxiety-free atmosphere for learning.

METRIC HOTLINE

The concept of a "Metric Hotline" was discussed and researched at length by the Advisory Committee and Project Staff. This type of program could be national in scope with use of an "800" toll-free number, and heavy publicity of the number.

Information could be provided by those sponsoring the program, and more specific informational needs could be determined by monitoring the type of calls received by the hotline. Referrals could also be made to other sources of metric information.

An added component to this type of program could be a complaint-handling capability. Consumers could phone in questions and complaints about metric conversion; a program of this type would prove to consumers that incidences of metric conversion which seem to defraud consumers will be dealt with quickly and effectively.

A "Metric Hotline" would have to be staffed by personnel who are intimately familiar with metrics, and sources of metric information.

PARENT-THROUGH-CHILD LEARNING PROJECTS

Parent-through-Child Learning Projects link the two target populations of this grant project: educators and consumers. A parent-through-child learning project can be developed both in school districts that have strong commitments to teaching metric and in those which are just beginning metric programs. This type of project can be used to teach metric to school children and has the capacity to assist in reinforcing that knowledge.

Project Staff corresponded with Ms. Doris Ritchey, an elementary school teacher in El Cajon, California who conducted a parent-through-child learning project. Materials were constructed by the students in the classroom, and lessons were taught on each unit of metric measurement. Materials and lessons were then brought home to the parents and administered by the children. Pre- and post- tests were conducted to determine the change in the parents' and students' metric awareness and knowledge; these tests showed that there was a significant increase in the metric awareness and knowledge in each group.* This type of project has implications outside of teaching metrics, as reported by Ms. Ritchy. The unforeseen side effects were also desireable. These included

*In the first year of the study, the pre-test score average for parents was 58% with the post-test score average of 87%, during the second year of the project, the pre-test score average for parents was 52% and the post-test average was 82%.

an increased interest in the curriculum in other areas besides metrics, and the increase in self-importance and esteem felt by the child who could demonstrate and explain metric measurement to help his parent understand metric worksheets.

Ms. Ritchey conducted the parent-through-child project for four years and reports similar results; an increase in metric knowledge on the part of parents and students. Ms. Pitchey also has included parent-through-child learning ideas in the inservice teaching training workshops which she conducts, and she reports that, although no statistics are available, other teachers are using this method and finding it successful.

Other parent-through-child projects were investigated; these are documented in Appendix 8.

Thus far the report has examined several existing methods of disseminating metric information to consumers. These systems by no means encompass all the various alternatives which could be incorporated into a massive public education program.

The following are possible components to be examined and/or included in such a program:

- prepare and distribute Public Service Announcements for radio and television stations.
- encourage local telephone and utility companies to use informational brochures as inserts along with monthly statements.
- contact major food companies, restaurants, hotels and complimentary industries to encourage them to involve their products and packaging in a program, i.e. paper napkins and cups, cereal boxes, restaurant mats.
- encourage the involvement of boy scouts and girl scouts. (For example, a merit badge would require each scout to teach the metric system to five individuals.)
- prepare comic strips, crossword puzzles, articles for distribution to local newspapers.
- examine the possibility of a metric postage stamp.
- design a metric car on a commuter train.
- encourage the involvement of senior citizens associations or groups.
- produce a national metric song.

EDUCATION PROGRAMS

HISTORICAL BACKGROUND - METRIC EDUCATION

An amendment to the Elementary and Secondary Act of 1965 (P.L. 93-380) in 1974 authorized funds specifically for metric education grants. Approximately $6.2 million has been allocated (FY 1976 - 1978) to state and local education agencies, public and private organizations and institutions of higher learning for the preparation and use of the metric system of measurement.

Prior to the 1974 legislation, several metric projects were funded. One of these projects "The Interstate Consortium on Metric Education" involved representatives from twenty-eight states in an effort to develop a model which could be used by various educational institutions in preparing one to utilize the metric system. "The Interstate Consortium on Metric Education" was responsible for the development of twenty three official recommendations to be used as guidelines for preparing students to function in a metric world. A list of these recommendations is included as Appendix 9. Other metric projects included research in the areas of vocational and technical education.

The National Institute of Education has also played an important role in metrication efforts by the funding of several metric research projects.

The Metric Conversion Act declares that "the policy of the United States shall be to coordinate and plan the increasing use of the metric system in the United States and to establish a United States Metric Board to coordinate the voluntary conversion to the metric system." [4] In order to fulfill its mission, the United States Metric Board is required to plan and implement a broad program of public education in order that all Americans may become familiar with the meaning and use of the metric system in their everyday lives.

The act further calls for "consultation and counseling by the Secretary of Health, Education and Welfare, the Secretary of the Small Business Administration and the Director of the National Science Foundation, together with such institutions as state and local educational agencies." [5]

This mandate is intended to insure that the metric system is firmly established as a fundamental component of our educational system and that teachers are properly trained to provide the instruction required to achieve this national goal.

The educational community occupies a unique position for affecting basic and gradual changes in the attitudes of our society. This is due not only to the fact that school age children are open-minded and approach new ideas without a vested interest in maintaining the status quo, but also because educators are rendered the respect associated with authority and good judgement.

[4] P.L. 94-168, 94th Congress, H.R. 8674, December 23, 1975. The Metric Conversion Act of 1975.

[5] Ibid.

Positive activity in this area must be considered pivotal in preparing the nation for the increased use of the metric system.

Jurisdiction over the educational system in the United States has always been delegated to the individual states. Curricula decisions are further delegated to local educational authorities spread across the approximately 17 000 individual school districuts. Ultimately, curricula decisions rest with the individual teacher.

The decentralized nature of our educational system complicates the need to implement a nation-wide effort to coordinate activities across school districts and across state lines. Nonetheless, such coordination is crucial for a number of reasons.

Of obvious importance is the fact that increased mobility on the part of the general population has caused many children to be educated in more than one school district. A parallel consideration is the fact that teacher preparation must, of necessity, be broad based to encompass the philosophy of different school systems. Finally, coordination of metric education is necessary to insure parental confidence in its use as a tool for other disciplines.

Despite state-wide interest in metric education, existing metric programs are not widespread. Although many states have passed resolutions promoting metric in schools, not all states

have statutory requirements regarding the inclusion of the metric system in the curriculum. According to the 1978 General Accounting Office Report, few states "felt that they could legally require that metric be included in local curricula",[6] therefore in some cases metric programs and policies may not be initiated at all.

In spite of the constraints associated with state sovereignity in the area of education, it does appear that existing institutions can accommodate metric instruction in our schools. National teacher associations are a readily available avenue of coordination. Moreover, several networks of primary and secondary educational systems have already been established, each of which offers an in-place mechanism for the coordination of information flow.

6 General Accounting Office, "Getting a Better Understanding of the Metric System--Implications If Adopted by the United States", 1978, Chapter 24, Page 5.

PROFESSIONAL ASSOCIATONS

A coordinated effort to disseminate metric information to educators requires the involvement of teacher's professional associations. These groups represent an established network for communication both directed toward and generated within the professional audience which is best equipped to further the acceptance and the use of the metric system.

Professional associations publish journals and newsletters which are both widely distributed and well received. Feature articles, editorial commentaries and letters from member readers all provide an in-place mechanism through which national news concerning metrication, specific examples of metric advancements and innovative ideas can be transmitted to interested readers. The editorial boards of these publications are skilled in packaging information in a manner consistent with the needs of professional educators.

National conferences and regional meetings conducted by these associations offer an opportunity for educators to obtain first-hand exposure to current methods of instruction relating to the metric system. Individual sessions aimed directly at metric education, and curriculum specific sessions which highlight the advantages of using the metric system as a tool within the educational process, can easily be incorporated into conference programs. Because these sessions are typically comprised of

invited papers followed by question and answer periods or audience involved discussions, they present a forum for the exchange of ideas between innovators and implementors. Interaction between these two groups is a prerequisite to large scale acceptance within the teaching community.

Professional associations also have the potential to initiate nation-wide events such as the "National Metric Week" sponsored annually by the National Council of Teachers of Mathematics. This undertaking focuses special attention on the role of the metric system in the learning experience and in translating that experience into day-to-day living. "National Metric Week" involves parents as well as children. Special projects and exhibitions coordinated with civic groups such as boy and girl scout troops, 4-H Clubs, PTA, YMCA/YWCA, and other local service clubs and organizations complement school based activities.

Professional associations, in conjunction with their varied affiliated groups, often provide in-service training for teachers and other professionals in their respective subject areas.

A listing of professional groups and/or associations, an approximate number of membership and publications of these groups/associations has been compiled and is included as Appendix 10.

RECOMMENDATION:

Professional associations should be used extensively in the dissemination of metric information.

UNIVERSITY LEVEL PROGRAMS

It has been mentioned that professional associations would appear to represent a viable network for the dissemination of metric information. Another channel which could be utilized is "Teaching Metric Education" courses both at the graduate and undergraduate levels. An individual program could be created or a separate course developed to be integrated into existing curriculum. The program could be designed through faculty, special committees appointed by national teacher associations, and lay professionals with practical experience in both the advantages and difficulties associated with the implementation of the metric system in the various disciplines.

An outline of such a model program should include such features as:

1) Assessment of metric needs

2) Types of activity for each need area facilitated by "Teaching the Metric System" Methods course with graduate credit

   a) knowledge
   b) teaching methods
   c) materials and lab
   d) workshop presentation

3) Materials Collection (make and take, free, inexpensive)

4) Universities to community and schools

5) Evaluation suggestions

This outline is intended for the purpose of illustration only, for in order to achieve effective results the actual outline should be developed by the three groups mentioned above.

Once such a program gains widespread acceptance, information flow could certainly be increased through academic journals and the publications of national teacher associations. College faculty would have the incentive to undertake research into new methods of instruction, with the intention of publishing results for professional advancement. Subscribers to educational publications would have a personal interest in remaining abreast of current developments in the field.

EDUCATIONAL RESOURCE INFORMATION CENTER (ERIC)

The most comprehensive activity in the area of distribution and dissemination of all education research and findings, within the National Institute of Education, is the Educational Resource Information Center (ERIC). ERIC is a national information system which acts as a collector, screener, organizer, and disseminator of educational reports and literature. Research projects, new teaching methods and innovative ideas for curriculum development are being designed by individuals across the nation at a rapid pace. ERIC assures that these on-going activities can be filtered to all interested parties.

ERIC is devised to operate as a four level system. The first level, Central ERIC, is located at the National Institute of Education in Washington. Central ERIC functions as the monitoring agent for incoming materials and acts as the policy setter and distributor of funds. The next level is represented by sixteen clearinghouses situated at various universities, learning institutions and professional societies scattered throughout the United States. The third level is made up of the facilities responsible for managing the data base and the reproduction of finished products. The final level consists of the end users - researchers, professional organizations, graduate and undergraduate students, teachers and school administrators who ultimately benefit from using the ERIC system.

RECOMMENDATION:

More "metric specific" projects and information should be incorporated into the current ERIC system.

TEACHERS' CENTERS

The impact of current teachers' centers and the formulation of new centers can be vitally important as metrication progresses in this country. Although each center is unique, they share common characteristics. All centers operate locally and are primarily under teacher control. They provide a forum where all interested parties can get together to exchange ideas, develop new materials and work on project designs for training in the classroom. Congress has authorized $13 million for the Office of Education Teacher Centers Program for the school year 1980-1981.

The Teachers' Center Exchange, sponsored by the National Institute of Education, assists in facilitating the exchange of information, ideas and expertise among the more than three hundred potential and or established teachers' centers in the United States. The Exchange functions on the premise that the best technical assistance can be obtained by the interchange of information among educators who operate within similar educational frameworks and philosophies. The Exchange sponsors conferences where experienced and beginning teachers' centers can come together to discuss topics of mutual concern. Some of the Exchanges' goals include assessing the effectiveness of its' staff services as well as providing preliminary research into the mechanics of Teachers' Centers Exchange as a dissemination alternative for educators.

RECOMMENDATION:

A closer examination of existing Teachers' Centers should be made to determine their potential effectiveness in the dissemination of metric information and materials.

THE NATIONAL DIFFUSION NETWORK

The National Diffusion Network (NDN) is an emmerging national system which was established to meet the needs of pre-school through secondary school children by making available to school districts and various educational institutions exemplary programs and practices.

These "exemplary" programs are tested and approved by the Department of Health, Education and Welfare's Joint Dissemination Review Panel (JDRP) which is composed of evaluators and experts from the U.S. Office of Education and the National Institute of Education. The Joint Dissemination and Review Panel functions as an internal review mechanism for proposed programs which are developed through federal funds. Approval of an individual program is based on the scope of its educational consequence and the plausibility of evaluative data given by the program developer.

The National Diffusion Network operates through the interaction of "Developer/Demonstrators" and "State Facilitators". The "Developer/Demonstrators" are staff whose tasks include the development of exemplary programs and provision of materials and training to those school districts interested in adopting a particular program. The "State Facilitator" has the responsibility of publicizing existing NDN programs, holding conferences to determine the needs of individual educators and arranging specific project demonstrations.

There are currently two metric programs belonging to the National Diffusion Network.

1) "Go Metric" is a supplemental low-cost metric curriculum for grades (K-12). The program identifies a variety of teaching techniques which involve the pupils in a number of "hands-on" activities using metric equipment.
2) "The Elementary Math Program" is an in-service training program for those teaching the metric system in grades (1-12), as well as a design to introduce metrics into the curricula for grades (1-6). Both of these programs have been approved and validated by JDRP.

RECOMMENDATION:

Since NDN programs are already tested and deemed acceptable and effective, the use of the network should be considered in terms of selection, evaluation and dissemination of metric materials and information.

METRICS IN VOCATIONAL, TECHNICAL AND ADULT EDUCATION

Since business and industry are fast becoming important parts of a metric America, the full implications of the use of metric units in the various occupational areas must be considered. The curricula requirements of metric conversion will undoubtedly be significant in the subject areas of mathematics and science but major consequences will also be evident in the technical career fields covered by vocational education. While some fields will require an in-depth working knowledge of metrics, others will only require an informational overview.

Project staff examined one project entitled the "Development and Utilization of Metric Education Instructional Materials in Vocational, Technical and Adult Education" which was sponsored by the U.S. Office of Education at the Center for Vocational Education at Ohio State University. The major purpose of the three year study was to examine the issues and problems involved in metrication of vocational, technical and adult education programs. This involved the development, utilization and dissemination of metric instructional materials.

Fifty five vocational-technical modules were designed to address seventy seven occupations. Each module consisted of five units which covered an introduction to the metric system, metric terms used in the specific occupations, job related metric equivalents, provision for experience in using metric instruments

and tools in occupational measurement tasks, and, provision for giving students practice in conversion of metric and customary units. The Adult Basic Education Model (ABE) was made up of three levels based on the reading ability for adults equivalent to grades (1-3), (4-6), (7-9). The ABE Module covers metric linear measurement, capacity, weight, area, volume and mass in accordance with one of the designated levels.

The Vocational-Technical Units and the Adult Basic Education Module share unique characteristics. They are the only existing sets of comprehensive materials aimed at assisting vocational-technical teachers and students and ABE students at the three levels mentioned.

As a major evaluation and dissemination activity, the Center for Vocational Education conducted one and one/half day in-service workshops in each of the ten U.S. Office of Education regions for vocational, technical and adult educators. Workshops were attended by participants providing statewide leadership in training, dissemination, and implementation of metric materials. The main thrust of the workshops was to assure that the states receive assistance in order that they could develop their own capabilities in regards to training teachers in the use of the fifty five vocational-technical units and the ABE Module.

RECOMMENDATION:

Vocational administrators should provide leadership by encouraging the appointment of metric planning committees and organizing metric awareness workshops. Information flow regarding these committees and workshops could be accomplished by advertisement in existing publications of professional associations used by educators at all levels.

CONTINUING EDUCATION UNITS

In 1968, a National University Extension Association task force assembled to determine the need for a common unit to measure non-credit courses. The result was the establishment of criteria and guidelines for the Continuing Education Unit (CEU). Prior to this action, there had been no formal method of evaluation or recognition of participation in adult education programs which did not award formal degree credit.

A growing number of adults are participating in continuing education programs and courses offered by universities, associations, vocational and trade schools and home study programs. Although many of these programs do not award formal degree credit, they provide participants with Continuing Education Units.

The U.S. Department of Agriculture Graduate School currently offers four metric workshops and one metric course which award students with Continuing Education Units. The workshops are designed to meet the needs of the consumer, office personnel, management and technicians. The course deals with theory, history, and practical applications of the metric system to everyday life.

RECOMMENDATION:

Institutions, organizations, and associations which have on-going continuing education activities should offer Continuing Education Units for metric education courses. This would provide the individual with incentive to learn the metric system.

SUMMARY OF RECOMMENDATIONS

- METRIC CONVERSION SHOULD NOT BE LINKED TO ANY OTHER TYPE OF CHANGE, AS RESISTANCE TO CHANGE IS A VERY STRONG FORCE WHICH INCREASES PROPORTIONATELY WITH THE AMOUNT OF CHANGE. THIS STATEMENT IS ESPECIALLY APPLICABLE TO PRICE INCREASES OCCURING WITH METRIC CONVERSION.

- PROGRAMS DEVELOPED TO DISSEMINATE METRIC INFORMATION SHOULD CONSIDER SOME TYPE OF EVALUATION IN ORDER TO DETERMINE WHETHER THE PROGRAM SHOULD BE REPEATED AND/OR APPLIED TO OTHER AREAS WHICH REQUIRE BROAD PUBLIC EDUCATION CAMPAIGNS.

- A CONCERTED EFFORT SHOULD BE MADE BY THOSE INVOLVED IN METRICATION TO INVOLVE CONSUMER AND COMMUNITY GROUPS IN THE PROCESS. BY ACTIVELY PURSUING INPUT FROM CONSUMER AND COMMUNITY GROUPS, METRIC CONVERSION WILL GAIN INTEREST AND SUPPORT OF THESE GROUPS, AND WILL BECOME A PRIORITY ISSUE.

- INCREASED USE OF THE MEDIA TO DISSEMINATE METRIC INFORMATION IS ESSENTIAL FOR THE SUCCESSFUL METRIC EDUCATION OF THE GENERAL PUBLIC.

- ORGANIZATIONS INVOLVED IN METRIC CONVERSION SHOULD DEVELOP MEDIA ADVISORY COMMITTEES IN ORDER TO FACILITATE CORRECT AND CONSISTENT METRIC USAGE BY THE MEDIA.

- FUTURE COMMUNITY AWARENESS PROGRAMS SHOULD BE DESIGNED WITH THE DEMOGRAPHICS OF THE COMMUNITY IN MIND. THE CONCEPT OF INTRODUCING THE ENTIRE COMMUNITY, RATHER THAN SPECIFIC SECTIONS OF THE COMMUNITY, TO THE METRIC SYSTEM IS AN ADMIRABLE ONE, BUT ONE WHICH MAY ONLY BE APPLICABLE TO SMALLER COMMUNITIES WHERE SUPPORT OF THE ENTIRE COMMUNITY AND THE COOPERATION OF THE MEDIA ARE ATTAINABLE GOALS.

- THERE MAY BE NO NEED TO DEVELOP SPECIAL MATERIALS FOR THE BILINGUAL POPULATION IN CASES WHERE THEY ARE FAMILIAR WITH THE METRIC SYSTEM. HOWEVER, THIS SHOULD BE RESEARCHED IN THE INDIVIDUAL COMMUNITY. BILINGUAL SCHOOL CHILDREN AND THEIR PARENTS COULD BE USED AS "METRIC RESOURCES" IN THE SCHOOLS AND IN THE COMMUNITY.

- COMMUNITY EDUCATORS MAY FIND THAT THE RESOURCES OF SENIOR CITIZENS CAN BE USED TO PROVIDE METRIC EDUCATION IN THE COMMUNITY. FUTURE COMMUNITY AWARENESS PROJECTS SHOULD CONSIDER USING THE EXPERIENCE AND SKILLS OF THE ELDERLY IN A TEACHING ROLE.

- METRIC SHOPPING MALL EXHIBITS SHOULD BE SET UP TO SOLICIT THE ATTENTION AND INTEREST OF SHOPPERS AND SHOULD INCLUDE REFERENCE MATERIALS.

- METRIC SHOPPING MALL EXHIBITS SHOULD BE STAFFED BY PEOPLE WHO ARE KNOWLEDGEABLE AND COMFORTABLE WITH THE METRIC SYSTEM SO AS TO PASS THIS COMFORT AND EASE ON TO THE SHOPPER.

- DISPLAYS IN SHOPPING MALLS ARE CAPABLE BY NATURE OF THEIR LOCATION, TO PRESENT SHORT LESSONS IN METRICS. THESE LESSONS SHOULD BE AS SIMPLE AS POSSIBLE, AND SHOULD NOT INVOLVE THE USE OF CONVERSION FACTORS.

- PUBLIC DISPLAYS FOR METRIC INFORMATION SHOULD NOT BE LIMITED TO SHOPPING MALLS. OTHER POSSIBILITIES ARE: LOBBIES OF BANKS, PUBLIC LIBRARIES, OFFICE BUILDINGS, PARKS AND OTHER PUBLIC AREAS.

- ORGANIZATIONS WISHING TO DISTRIBUTE INFORMATION TO CONSUMERS SHOULD CONSIDER UTILIZING THE INFORMATION SYSTEM OF THE COOPERATIVE EXTENSION SERVICES. COORDINATION IS BEST ACHIEVED THROUGH THE WASHINGTON, D.C. HEADQUARTERS OF THE COOPERATIVE EXTENSION SERVICE WITHIN THE U.S. DEPARTMENT OF AGRICULTURE.

- EXTENSIVE EFFORTS SHOULD BE MADE TO INFORM AND EDUCATE THE CONSUMER IN THE MARKETPLACE, SPECIFICALLY IN GROCERY STORES AND SUPERMARKETS.

- BY DEVELOPING A SERIES OF LESSONS ON CASSETTES AND DISSEMINATING THEM TO THE STORES INVOLVED, METRICS COULD BE TAUGHT IN A TIMELY AND ORDERLY FASHION.

- ANY EQUIPMENT USED IN A MARKETPLACE PROJECT COULD BE TAILORED TO BE SITE SPECIFIC, AND THIS TYPE OF PROGRAM HAS THE POTENTIAL TO BE USED FOR THE DISSEMINATION OF ANY TYPE OF CONSUMER INFORMATION, NOT JUST METRIC INFORMATION.

- PROFESSIONAL ASSOCIATIONS SHOULD BE USED EXTENSIVELY IN THE DISSEMINATION OF METRIC INFORMATION.

- MORE "METRIC SPECIFIC" PROJECTS AND INFORMATION SHOULD BE INCORPORATED INTO THE CURRENT EDUCATIONAL RESOURCE INFORMATION CENTER (ERIC) SYSTEM.

- A CLOSER EXAMINATION OF EXISTING TEACHERS' CENTERS SHOULD BE MADE TO DETERMINE THEIR POTENTIAL EFFECTIVENESS IN THE DISSEMINATION OF METRIC INFORMATION AND MATERIALS.

- SINCE NATIONAL DIFFUSION NETWORK PROGRAMS ARE ALREADY TESTED AND DEEMED ACCEPTABLE AND EFFECTIVE, THE USE OF THIS INFORMATION NETWORK SHOULD BE CONSIDERED IN TERMS OF SELECTION, EVALUATION AND DISSEMINATION OF METRIC MATERIALS AND INFORMATION.

- VOCATIONAL ADMINISTRATORS SHOULD PROVIDE LEADERSHIP BY ENCOURAGING THE APPOINTMENT OF METRIC PLANNING COMMITTEES AND ORGANIZING METRIC AWARENESS WORKSHOPS. INFORMATION FLOW REGARDING THESE COMMITTEES AND WORKSHOPS COULD BE ACCOMPLISHED BY ADVERTISEMENT IN EXISTING PUBLICATIONS OF PROFESSIONAL ASSOCIATIONS USED BY EDUCATORS AT ALL LEVELS.

- INSTITUTIONS, ORGANIZATIONS, AND ASSOCIATIONS WHICH HAVE ON-GOING CONTINUING EDUCATION ACTIVITIES SHOULD OFFER CONTINUING EDUCATION UNITS FOR METRIC EDUCATION COURSES. THIS WOULD PROVIDE THE INDIVIDUAL WITH INCENTIVE TO LEARN THE METRIC SYSTEM.

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APPENDIX 1

American National Metric Council

1978-1980 OPERATING PLAN —

"At Sears we recognize that the knowledge and experience of our sources must be integrated with our own in moving toward conversion. Further, we will contribute our financial support to private sector organizations like the American National Metric Council which provide the needed focus for our plans and coordination for our efforts. We applaud the ANMC and its work and guidance."

A. Dean Swift,
President, Sears, Roebuck and Co.

"I commend your effective leadership in coordinating voluntary metric activities in the private sector....Your organization has already laid much of the groundwork for a successful conversion program....I am confident that the Metric Board will call upon you to continue your pivotal role in guiding our nation through the move to metric.

President Jimmy Carter

"The expected mechanism for voluntary conversion will be through agreements reached in trade association metric meetings. The vehicle for initiating these metric planning meetings and insuring their continuation will be the American National Metric Council."

Arthur W. Woelfle
President and Chief Operating Officer
Kraft, Inc.

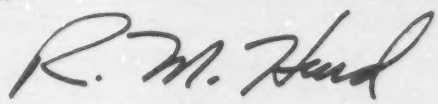
"The U.S. Metric Board has noted the substantial contributions of the American National Metric Council in providing leadership in the private sector for managing the increasing usage of the metric system in business and industry. The U.S. Metric Board hereby records its position that the continued contribution of the American National Metric Council is a necessary ingredient of an effective total program in the United States."

U.S. Metric Board resolution
April 3, 1978

In the short span of five years, the American National Metric Council (ANMC) has grown from nothing more than an idea to a self-sustaining organization of over 1600 subscribers, with nearly 40 coordinating and sector committees carrying on the task of managing the orderly transition to metric measurement.

ANMC's mission is to provide planning, coordination, and information services to all segments of society affected by the changeover. ANMC involves business, industry, consumer and labor organizations, the education community, and government agencies in the belief that a well planned and managed conversion program will ultimately benefit the entire nation. The Council welcomes the support and participation of any group or individual interested in and involved in the transition to metric.

Through ANMC, the private sector has assumed the leadership role in managing metrication. Draft sector conversion plans for nine industries have already been developed and released for comment. Once approved, the plans will be the basis for individual company planning and decision-making. ANMC will continue to place emphasis on sector planning in the next two years. In addition, ANMC will play a major role in providing guidance and assistance to the U.S. Metric Board as metrication evolves in the U.S.



R. M. Hurd
Chairman of the Board
American National Metric Council

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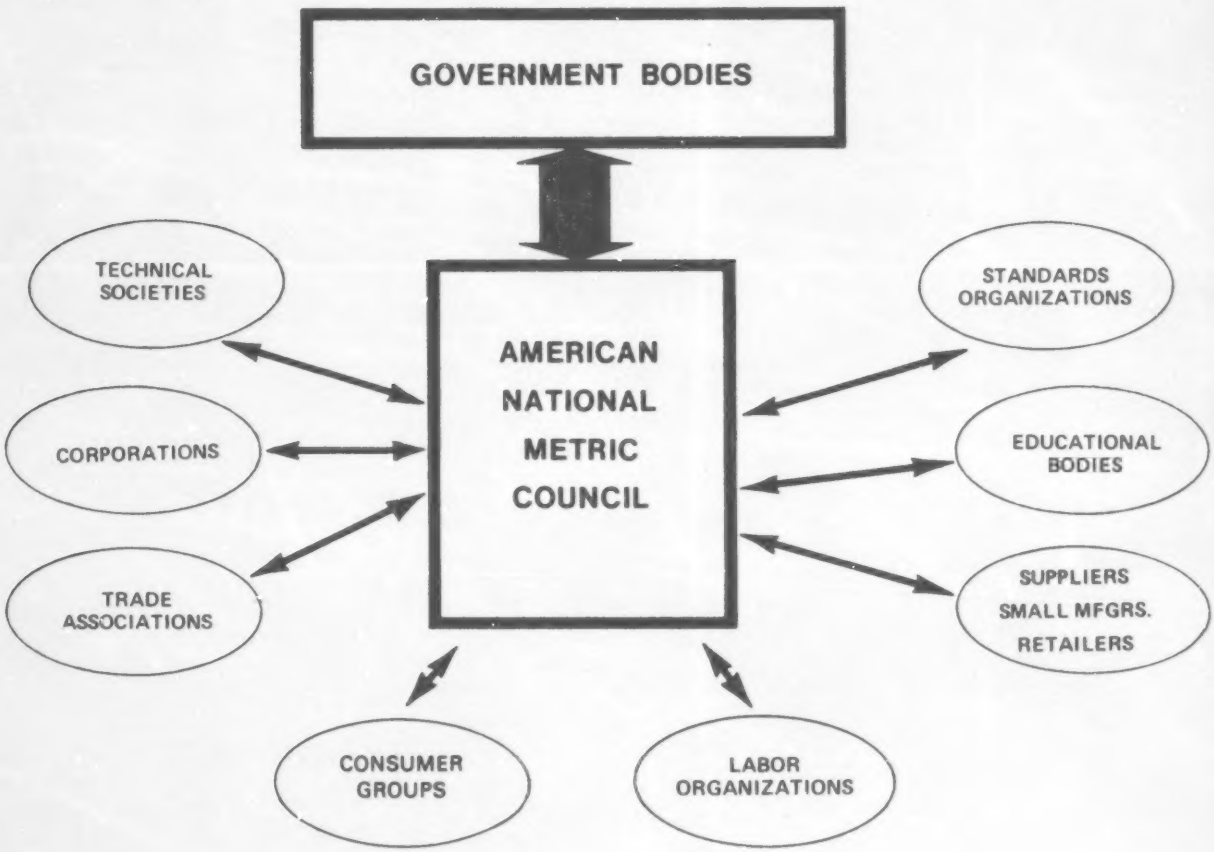
WHAT IS ANMC?

The American National Metric Council (ANMC) is a private, nonprofit organization dedicated to planning and coordinating voluntary metric conversion in the various sectors of the U.S. economy. ANMC's main tasks are: to prepare and coordinate industry conversion plans; to keep subscribers and others informed of U.S. metric developments; to prepare the U.S. for conversion through education and information programs, and; to act as a representative of the private sector in formulating a coordinated industry-government approach to metrication.

ANMC recognizes that metrication is everybody's business. Participative management and involvement by all sectors of the economy in a consensus process is the basis of our operational philosophy. ANMC operates on the premise that existing organizations should accept the responsibility for planning and implementing metrication, and that policy determination, timing, and the degree of metric usage should be determined by those affected. ANMC exists to provide information and coordination for these activities and to serve as a communication channel.



ANMC's Planning and Coordination Function

Sector committees—concerned parties meeting under the auspices of ANMC to plan for conversion—are at the heart of ANMC's organization. The sectors, organized under six coordinating committees representing broad segments of the nation's economy, operate on the principle of voluntary consensus. Each committee is composed of representatives of interests directly affected by conversion: suppliers, manufacturers, consumers, users, labor, and government. Their purpose is to prepare a coordinated sector conversion plan that will serve as a guideline for individual company planning. Sector committees identify standards needs, determine legislative requirements for conversion, recommend metric units for sector use, examine time requirements for conversion, and evaluate conversion strategies.

The secretariat of each sector committee is usually assumed by a leading trade or technical association within the industry. Participants on each committee are designated by the various organizations and associations to represent specific segments of the sector, but are drawn from association membership rather than staff.

ANMC's Information Function

ANMC is a primary source of information about metric activities in the U.S., Canada, and around the world.

The biweekly *Metric Reporter* provides the latest information on metric developments in business, industry, government, education, and consumer affairs. Special publications covering a wide range of metric topics and issues are published periodically.

An integral part of ANMC's information program is the national conference held in the spring of every year. The conference brings together leaders from the private and public sectors to: 1) review events and progress of the past year; 2) exchange ideas and opinions on conversion strategy; and 3) plan for the issues facing them in the years ahead. ANMC also sponsors metric seminars and workshops in different parts of the country, frequently in conjunction with standards-writing organizations and trade or professional associations.

ANMC also acts as an information and resource center for consumers and consumer groups. Informed and involved consumers are a necessary part of an efficient conversion program. The Consumer Liasion Committee assures that the views of the consumer are represented in ANMC and provides a means for consumer participation in both ANMC and the conversion process.

ANMC HIGHLIGHTS

5-73	First Board meeting
6-73	Liaison established with Australian, Canadian, and New Zealand Metric Conversion Boards
9-73	Liaison established with South African Metric Commission
11-73	Liaison established with British Metrication Board
1-74	First Coordinating Committee meetings
1-74	First issue of the **Metric Reporter**
9-74	*Metric Editorial Guide* published
5-75	ANMC testifies before U.S. House of Representatives on metric conversion legislation
10-75	ANMC testifies before U.S. Senate on metric legislation
2-76	Consumer Liaison Committee established
7-76	ANMC publishes its first planning document: *ANMC Organization Structure and 1976-1978 Work Plan.*
9-76	President Ford nominates 3 members of ANMC's Board of Directors and 2 ANMC committee officers to U.S. Metric Board
3-77	Labor Liaison Committee established
5-77	ANMC awarded National Weather Service contract
7-77	ANMC's *Metric Guide for Educational Materials* distributed to all U.S. school districts by National Institute of Education
8-77	Dun & Bradstreet audit of ANMC subscribers indicates a high level of satisfaction with ANMC
10-77	President Carter renominates ANMC associates to U.S. Metric Board
3-78	Creation of a Food and Grocery Products Coordinating Committee approved by Board of Directors
4-78	First sector conversion plans discussed at ANMC's 4th Annual Conference

ANMC IN 1977

The Planning and Coordination Program

ANMC sector committees concentrated on developing sector conversion plans during 1977, with a 50% increase in the number of sector meetings. The plans are being prepared using the consensus approach and are intended to serve as guidelines for individual company planning.

Organizational work among the committees continued. New sectors for paper, medical devices, food service, and dairy products convened. In response to growing food industry interest in metrication, seven additional food products sectors will be convened by the end of 1978.

Many sectors have broken down their tasks by subsectors in order to meet the specific needs of those involved. A task group on metric fasteners held an organizational meeting during the year, as did an advisory group on fluid power. The tariff issue was addressed formally in two meetings of interested parties.

Several committees made significant progress on special projects during the year. The Educational Materials sector prepared *The Metric Guide for Educational Materials*, a booklet designed to promote correct metric usage in educational materials. This booklet received wide recognition among educational groups, including an endorsement from the National Council of Teachers of Mathematics. The book was distributed to every school district in the country by the National Institute of Education. Distribution of the *Metric Guide for Educational Materials* has exceeded 120 000 copies.

The Consumer Liaison Committee, one of ANMC's advisory committees (see page 12 for organizational information) published two informational booklets during 1977: *A Metric Reference for Consumers* and *Metrication and the Consumer: Avoiding Deception in the Marketplace*. Both publications were distributed to consumer groups, members of Congress, Better Business Bureaus, and the general public as part of the committee's responsibility of insuring consumer involvement in metrication.

Cooperation between ANMC committees and government agencies increased during 1977. As part of a government contract, ANMC assisted the National Weather Service (NWS) in collecting comments on their proposal for converting public weather reporting. Based on an ANMC report, NWS revised their plan and delayed implementation of the plan until June 1979. ANMC also worked with Associated Press, United Press International, the National Association of Broadcasters, and other media groups in publicizing the weather conversion plan.

'74

Throughout the year ANMC maintained close liaison with the White House to ensure that the U.S. Metric Board would have proper consideration.

ANMC was a major resource for the metric study task force of the General Accounting Office (GAO). The final report of the GAO group is expected to be released in 1978.

In cooperation with the National Governors' Association and the Council of State Governments, ANMC convened a meeting to discuss coordination of metric planning among states. The group will eventually develop a model state metric plan and guidelines for state metric committees.

The Information Program

ANMC's primary information tool, the *Metric Reporter*, took on a new look in 1977. A "News in Brief" section was added to the front page, and more emphasis was placed on reporting company and committee activities.

ANMC also published seven special publications during 1977. In addition to the two Consumer Liaison Committee booklets and the *Metric Guide for Educational Materials*, publications issued during the year included: *A Selected Bibliography for Metrication in Business and Industry*, *The Metric System Day to Day*, *Metrication for the Manager*, and *The Metric Editorial Guide* (3rd Edition). ANMC also put together a "Metric Consumer Information Kit" for sale to the general public.

The seminar and workshop program continued to meet the growing education needs of the private sector. Four management seminars, four metric awareness seminars, and two workshops for trainers were conducted. In addition, ANMC cosponsored metric education programs with the American Society of Mechanical Engineers, the Society of Manufacturing Engineers, and the Pennsylvania Society of Professional Engineers.

ANMC also expanded its public information role in 1977, answering over 70 000 requests for information on a wide range of metric topics.

ANMC IN THE YEARS AHEAD

The Metric Planning Environment

The Metric Conversion Act, signed into law by President Ford on December 23, 1975, declares a national policy of coordinating the increasing, voluntary use of the metric system. The Act and its legislative history clearly specify that the conversion program is to be a voluntary one, which at this point includes the option not to convert. The Act did not establish an overall timetable for conversion; each segment of the economy will plan on a time scale appropriate to its own conditions.

The Act also created a U.S. Metric Board to coordinate metric activities. The Board was nominated by President Carter in October 1977, with Senate approval coming in March 1978. It is hoped that the Board will be operational by mid-1978.

Even in the absence of the Metric Board, conversion in the private sector continues at a steady pace. This is in keeping with the spirit of the Act, which acknowledges that the initiative for metrication will come from the private sector. As then Secretary of Commerce Elliot Richardson told ANMC's 1976 conference: "The U.S. Metric Board will serve as a facilitator, but will not be the initiator. The initiative for metric conversion will still come from the private sector."

The Metric Conversion Act also specifies that the Metric Board "shall take into account activities underway in the private and public sectors, so as not to duplicate unnecessarily such activities." The development of conversion plans by ANMC sector committees constitutes "such activities," and the Metric Board will look to these sector plans for guidance.

Early indications are that the U.S. Metric Board will rely heavily on ANMC's planning experience. The first resolution of the Board, issued at its inaugural meeting in April 1978, states: "The U.S. Metric Board hereby records its position that the continued contribution of the American National Metric Council is a necessary ingredient of an effective total program in the United States."

International Environment

Events on the international scene continue to have an effect on U.S. metrication planning. The EEC (Common Market) directive requiring the use of metric labelling on all products after April 21, 1978 has led many companies to reconsider their policy on conversion.

Conversion activities in most English-speaking countries are nearing completion. After several years of uncertainty, the United Kingdom enacted legislation removing legal obstacles to metrication and established cut-off dates for retail products in customary units. British officials project 1982 as the completion date for their conversion program. Conversion in Canada continued on schedule, and the Metric Commission of Canada expects the country to be substantially metric by the end of 1980. However, metrication in most Canadian industries depends heavily on U.S. plans. Conversion in these sectors will be closely coordinated with U.S. policy and timing will be determined accordingly.

U.S. Industry Environment

Industry metric activity continued at a steady pace in 1977. Companies in the automotive, materials, computer, and agricultural and industrial vehicles sector have been designing products to metric specifications for a number of years, and many of these products are now on the market. It is expected that these sectors will be predominantly metric by the early 1980's.

Companies in the consumer products sector exhibited an increased interest in conversion during 1977, and investigation and planning are getting underway in the sector. Their commitment to metric is found in the words of Dean Swift, president of Sears & Roebuck, who told ANMC's 1977 Annual Conference that 1985 is a "very realistic goal" for his company's new products and operations to be predominantly metric.

As a result of increased interest in the food sector, a new coordinating committee for Food and Grocery Products was created at a March 15, 1978 meeting of ANMC's Board of Directors.

Companies issuing metric policy statements in 1977 included Coca-Cola, Union Carbide, Du Pont, Burlington Industries, and Texas Instruments.

Government Planning Environment

At the federal level, an Interagency Committee on Metric Policy, composed of representatives at the Assistant Secretary level, is expected to be appointed in 1978. The committee will resolve differences among agency metric programs and act as a liaison for the executive branch with the U.S. Metric Board. Metrication planning and implementation is well underway in many federal agencies, including the Departments of Commerce, Agriculture, Defense, Interior, and Transportation.

The conversion proposals of two federal agencies, the National Weather Service (NWS) (for public weather reporting) and the Federal Highway Administration (FHWA) (for highway signs), resulted in increased public awareness of metric conversion. Both plans were the subject of news stories, feature articles, and editorials in newspapers across the country; the plans were also widely publicized by radio and television stations. Some of the publicity was in opposition to the plans.

Although NWS approved a revised plan for submittal to the U.S. Metric Board, the FHWA proposal was withdrawn because of negative public reaction. Of the 5000 comments FHWA received from the general public on the proposal, over 90% were negative. Public outcry over the proposal led one congressman to introduce a bill that would have prohibited the expenditure of federal funds for highway sign conversion without the direct authorization of Congress. The resolution of this issue—whether an executive agency or Congress has the power to release funds for conversion programs—will be a key concern in the coming years.

1978-1980 Outlook

The pace of metric conversion during the 1978-1980 period will be determined largely by two factors: 1) the strength of the economy; and 2) the ability of industry and government to obtain public acceptance of metric conversion.

Metric implementation will be affected by economic conditions. Conversion is only one of many challenges facing American business. It is not considered a high priority task by most corporate management, and will not be undertaken unless one or more of the following conditions exist:

— it is economical to convert
— it simplifies the product line
— a marketing advantage is perceived
— customers require a metric product
— there is a consensus of all interests
— international operations make it necessary
— it can be accomplished as part of the normal product life cycle

In short, slow economic growth will retard metrication activities.

As conversion in the industrial sector progresses, metrication becomes less of a technical problem and more of a marketing problem. Public reaction to the FHWA proposal shows that conversion will become more of a political/emotional issue as the public is confronted with metric realities. One Indiana state senator introduced a bill calling for a statewide referendum on conversion. (The bill was eventually tabled.) More organized anti-metric efforts are expected in the years ahead. The success of conversion, then, depends on the ability of government and industry to provide valid reasons why the public should accept conversion. If the fate of conversion is not determined in the market, it could be jeopardized at the polls.

The task ahead is not simple. An October 1977 Gallup Poll revealed that 45% of the American public is opposed to conversion, and that another 26% is not even aware of the metric system. A major metric information and awareness program must be conducted to obtain the acceptance of these 150 million Americans.

Educating the public on metric is not a matter of explaining that the metric system is simpler than the customary system and that it eliminates the need for awkward fractions. Such methods will prove unsuccessful, for the public will fail to see how a system they do not know can be simpler than a system they have known and used all of their lives. The public must believe that conversion offers practical benefits, and must be included in conversion planning to ensure that these benefits are realized.

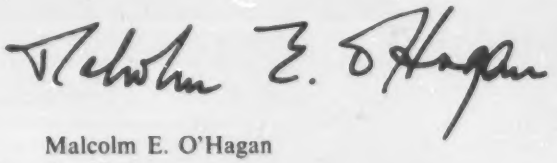
While it is anticipated that the U.S. Metric Board will be very active in public education, industry, commerce, and the retail trades must ultimately accept this responsibility. ANMC will continue to aid the private sector in fulfilling this informational role in the years ahead.

Planning For The Future

Thanks to the involvement in ANMC of over 300 trade, professional, labor, consumer, and government organizations and over 400 major corporations, the change to metric in the U.S. is being managed in an organized, cost-effective manner. Representatives of these companies and organizations are participants on ANMC's coordinating and sector committees, which plan and coordinate conversion in and among various sectors of the economy. The scope and intensity of ANMC committee activities is remarkable in view of the fact that U.S. conversion is a *voluntary*, not a mandatory, undertaking. Trade and professional organizations are sharing ANMC's administrative burden by accepting the secretariats for sector committees.

Through the work of the committees, producers, distributors, and users are coordinating their activities to cut costs and minimize problems. The committees operate on the principle that metric conversion, if carefully planned and soundly managed, will offer significant advantages for business and the nation.

The operating plans developed by ANMC committees and outlined in the following pages set down specific work objectives. These plans, which will be updated annually, provide a means not only for determining future direction of metrication activities, but also for evaluating past performance and progress. An undertaking as immense and significant as changing the system of measurement for an entire nation must be handled in a manner both organized and flexible. It is ANMC's intent that these plans serve that function.



Malcolm E. O'Hagan
President
American National Metric Council

The Metric Management Process

The management of metrication in a sector progresses through four identifiable phases:

organization
planning
scheduling
implementation

Organization

Organization involves the establishment of a sector committee to address the issues and develop a sector conversion plan. Membership on a sector committee is open to all interested parties and every effort is made to insure the broadest representation possible. Sector committees may be organized into subsectors as circumstances dictate. The organizational phase also involves the appointment of a trade or other association to serve as administrative secretariat. Committee officers are appointed by the cognizant Coordinating Committee. Each sector committee is requested to prepare a Committee Work Plan outlining its proposed activities for a two-year period. These plans are updated annually.

Planning

Each sector committee is charged with preparing a Sector Conversion Plan (SCP) in accordance with ANMC's Planning and Procedures Manual. The SCP is a long-term plan outlining the objectives and specifying the tasks required for the complete or partial conversion of a sector of the economy to metric usage. The plan identifies those responsible for performing the tasks and includes a schedule for their accomplishment. The annual updates of the SCP report on progress of conversion. There is no obligation to conform to the SCP; it merely represents the best judgment of the sector on how to approach conversion. The SCP is to be used as a guide and pattern for individual decision-making.

Each plan contains five major elements:

Executive Summary: Describes what the sector comprises, its approach to conversion, its objectives, policy, strategy, assumptions, and the nature of any constraints or dependencies. The situations to be achieved by the sector by key event dates within the plan are described. It also contains some guidelines on the use of the plan by individual organizations in preparing their own plan.

Task Breakdown & Description: Identifies and describes the tasks to be performed for conversion of a sector of the economy to metric usage. Task description forms are used to address the basic questions relating to the tasks: what is the task to be performed, how, why, by whom, and when.

Network diagrams: Order the tasks in their logical time sequence and show their interrelationship in pert chart form.

Bar Charts: Summarize the tasks showing the time duration for each task and where it occurs along the time scale. The bar chart also identifies the various key events in the conversion plan (see sample).

Company planning guidelines: Provide guidance for individual company planning and implementation consistent with the overall sector conversion plan.

Scheduling

The scheduling phase is that critical phase where start and finish dates are assigned to the individual tasks. This may be done concurrently with the development of the plan or separately after the draft plan has been subjected to broad consensus review. The assignment of dates follows consultation with all affected parties within the sector, with other sectors, and with the U.S. Metric Board. The draft plan with proposed dates and timetables will be published for comment and submitted to the U.S. Metric Board for review.

Implementation

Implementation of certain tasks may begin prior to completion of the entire plan. A case in point is the units selection task. The implementation of some tasks may be contingent on legislative action or U.S. Metric Board approval. The sector committee may assume responsibility for the implementation of certain tasks. However, in general, the role of the sector committee during the implementation phase will be one of monitoring progress and addressing any issues that arise in the course of implementation.

SECTOR CONVERSION SCHEDULE

Date: _____

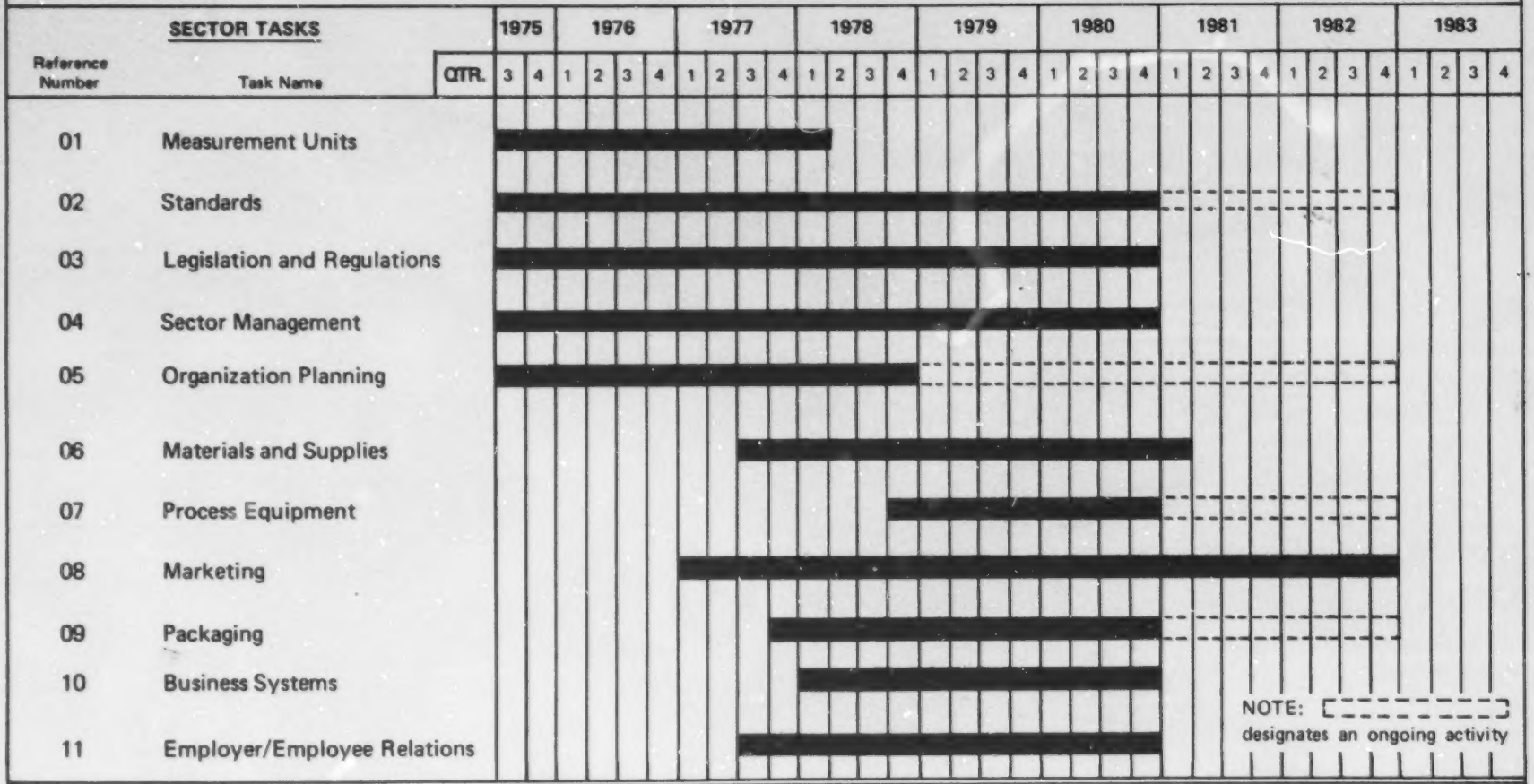
Page: ___ of _____

Revision: _____

American National Metric Council Chemical and Allied Products Sector 1.02

(This schedule is integral part of the Sector Conversion Plan of above sector, dated: 3/78;

it should only be studied and commented on together with the complete Sector Conversion Plan.)


SECTOR TASKS
Reference Number
Task Name
QTR.
1975 1976 1977 1978 1979 1980 1981 1982 1983
3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
01 Measurement Units
02 Standards
03 Legislation and Regulations
04 Sector Management
05 Organization Planning
06 Materials and Supplies
07 Process Equipment
08 Marketing
09 Packaging
10 Business Systems
11 Employer/Employee Relations
NOTE: designates an ongoing activity

KEY EVENTS	No.	Date	Description	No.	Date	Description
	1	2/78	Publish Metric Units Application Guide	6	1/81	Formed Products available
	2	1/81	Revised Priority Standards	7	1/83	Consumer Products available
	3	1/81	Revised Legislation & Regulations	8	1/79	Recommended Package Sizes available
	4	1/81	Products predominantly in Metric	9	1/81	Implement Changes to Business Systems
	5	1/81	Industrial products available			

Scope of ANMC Committees

Participation in all committees is encouraged, it is voluntary, costs are borne by the participants.

Steering Committee

Subject to the policy supervision and direction of the Board of Directors and the Executive Committee, the Steering Committee provides guidance in overall coordination and planning among all coordinating and sector committees.

Coordinating Committees

Managing bodies of the sector committees under their jurisdictions; encourage improvement of procedures, practices and committee operations; provide forum for the surfacing and resolution of intersector problems and conflicts.

Sector Committees

The core of ANMC is its sector committees, which carry out the main function of the Council: planning and coordinating metric activities in the various sectors in the economy. These sector committees are grouped under six coordinating committees. They consolidate input from all segments of each sector (manufacturers, suppliers, labor, consumers, regulators, etc.) into a sector conversion plan which serves as guide and pattern for individual conversion decisions.

The secretariat function of the sector committees is served by a leading trade or professional association within the industry. Participants on each committee are designated by the various organizations and associations to represent the specific segments of the sector, but are drawn from membership rather than staff.

The sector committees draft the sector metric conversion plans and annual updates thereof. In the plan the sector committee *identifies and assigns* all tasks needed to be performed for the conversion of the sector. The sector committee does not perform most tasks, as such tasks are within the responsibilites of existing trade and professional organizations as part of their normal course of business. However, it *does monitor the performance of all tasks.* It acts as a catalyst within the sector of the economy. The performance of some tasks begins prior to the completion of the Sector Conversion Plan, i.e., Implementation begins before the plan is complete (e.g., selection of SI Units, conversion of documentation, standards, etc.)

Operations Committees

Eight Operations Committees provide guidance for ANMC activities:

Services Committee recognizes and recommends means of fulfilling the needs of ANMC subscribers. It also provides guidance to the education and information programs developed by the Council.

Public Relations Committee is responsible for directing the publicity and public relations policy of the Council, through publications and the trade and public media.

Consumer Liaison Committee assures that the views of the consumer are represented in ANMC and provides means for consumer participation in both ANMC and the conversion process.

Procedures Committee provides legal advice to the Council on antitrust implications of industry-coordinated committee work. The committee has established guidelines for meeting agendas, minutes and representation.

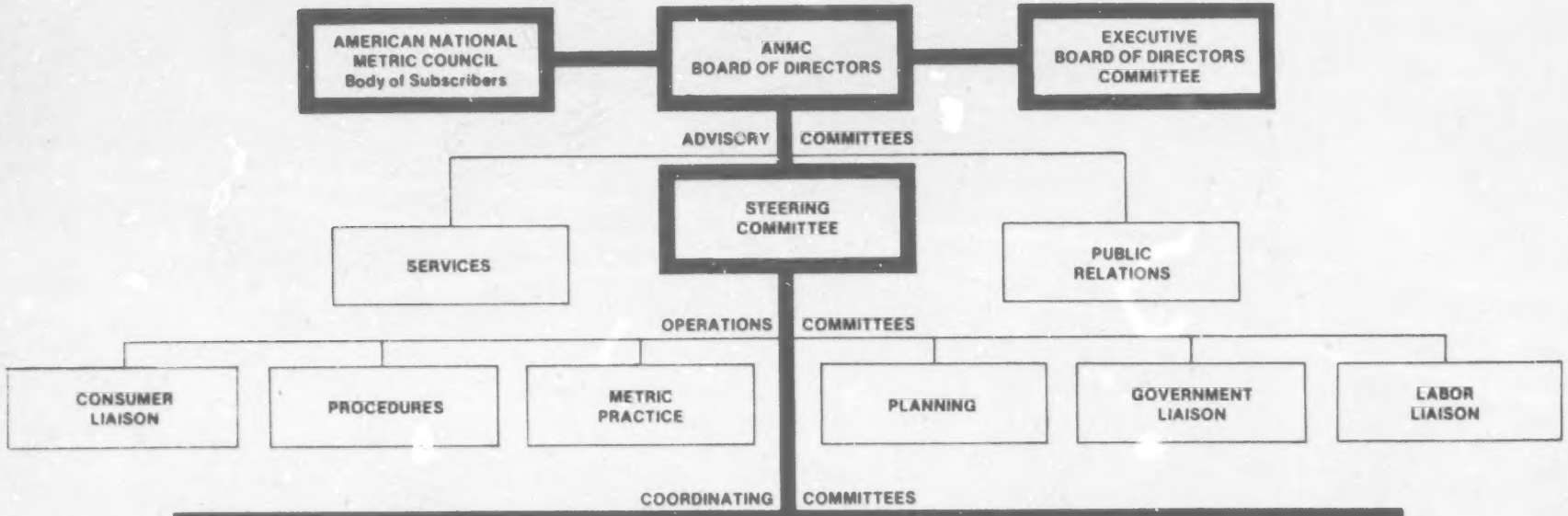
Metric Practice Committee has the primary function of recommending needs and priorities for development of new or revision of existing standards for metric practice.

Planning Committee develops and monitors implementation of a self-sustaining planning methodology within ANMC.

Government Liaison Committee is responsible for establishing relations with the U.S. Metric Board and other governmental bodies involved in metric conversion.

Labor Liaison Committee assures that the views of labor are represented in ANMC and establishes constructive and cooperative relationship between labor and ANMC committees.

ANMC ORGANIZATION CHART



SECTOR COMMITTEES

- 1.01 Metals
- 1.02 Chemical & Allied Products
- 1.03 Petroleum & Natural Gas
- 1.04 Lumber & Wood Products
- 1.05 Paper
- 1.06 Mined & Mineral Products

- 2.01 Aerospace
- 2.02 Rail
- 2.03 Maritime
- 2.04 Highway Vehicles
- 2.05 Construction & Agricultural Equipment
- 2.06 Machinery
- 2.07 Power Generation
- 2.08 Electrical Goods
- 2.09 Electronic Equipment & Components
- 2.10 Data Processing & Office Equipment
- 2.11 Instruments
- 2.12 Medical Devices
- * Metric Fasteners Task Group
- * Fluid Power Advisory Group

- 3.01 Design
- 3.02 Codes & Standards
- 3.03 Products Manufacturers
- 3.04 Contractors
- 3.05 Information
- 3.06 Real Estate
- 3.07 Users
- 3.08 Surveying & Mapping

- 4.02 Apparel
- 4.03 Weights & Measures
- 4.04 Packaging Advisory Committee
- 4.05 Textiles

- 5.01 Employee Training
- 5.02 General/Academic Education
- 5.03 Educational Materials
- 5.04 Vocational Education
- 5.05 Home Economics Education
- 5.06 Engineering Education

- 6.01 Meat, Fowl & Fish
- 6.02 Dairy Products
- 6.03 Fresh Fruit & Vegetables
- 6.04 Shelf Stable Foods
- 6.05 Frozen Foods
- 6.06 Beverages
- 6.07 Non-Food
- 6.08 Retailers
- 6.09 Food Service

SECTOR COMMITTEES

ANMC 1978-1980 OPERATING PLAN

1978-1980 Planning and Coordination Activities

The task of organizing sector activity has, for the most part, been completed Additional sectors have been, and will continue to be, organized on an as needed basis. An attempt to organize a segment of the agricultural community early in 1978 failed to evoke support from the private sector.

The primary sector committee tasks for 1978-1980 are: 1) development of a draft sector conversion plan: 2) publication of a list of preferred metric units for sector use; 3) identification of measurement sensitive laws, codes, and regulations; and 4) identification of training needs.

Draft conversion plans for the construction, food, textile, chemicals, metals, power generation, electrical goods, aerospace, and highway vehicle sectors were presented at ANMC's 4th Annual Conference in April 1978. Comments on the plans will be collected from all concerned parties to ensure sector-wide consensus. Final sector plans will be submitted to the U.S. Metric Board.

The sector committees are developing tentative lists of recommended units, specifying the normal range of numerical values of each unit-multiple, using guidelines provided by the Metric Practice Committee. The resulting lists will be tabulated by ANMC into a common list, which will be circulated to the sector committees and the Metric Practice Committee in a joint effort to consolidate the choices. Any differences between the sector committees and the Metric Practice Committee will be resolved by the Steering Committee. The resulting coordinated list, and each sector's coordinated list, will be publicized through the normal communication channels within each sector.

Other sector committee tasks for 1978-1980 are: making recommendations to standards writing committees: acting as catalyst for the resolution of problems; maintaining liaison between regulators and the regulated; providing metric planning assistance to the companies and organizations within the sector.

Individual sector committees goals for 1978-1980 are outlined below.

Materials

1.01 *Metals*
More intersector meetings with users are planned for 1978-1980. The sector will also work toward: 1) the timely publication of metric engineering standards by national and international standards organizations; and 2) universal use of preferred metric sizes.

1.02 *Chemical & Allied Products*
The sector will develop package size recommendations in 1978, and a sector guide for metric packaging will be prepared in 1979. A list of standards requiring conversion will also be compiled.

1.03 *Petroleum & Natural Gas*
A strategy for identifying and amending measurement sensitive laws and regulations will be developed in 1978.

1.04 *Lumber & Wood Products*
The sector anticipates a 5-year period for complete conversion; timing will be determined largely by the plans of the construction industry. A series of metric sizes for softwood lumber is a critical element of sector planning.

1.05 *Paper*
The sector will continue to monitor metric activities, relying on industry for the initiative to convert. Broader participation in the sector, particularly by corporate representatives, will be sought.

1.06 *Mined & Mineral Products*
Sector is not currently operational. Plans for the 1978-1980 period include identification of appropriate representatives to serve on the sector and other organizational activities.

Engineering Industries

2.01 *Aerospace*
The development of metric standards and specifications continues. The committee will continue to monitor the status of nearly 2000 standards.

2.03 *Maritime*
The pace of conversion in the maritime sector will be determined by: 1) government posture; 2) metric capabilities of components and systems suppliers; and 3) availability of metric regulations, standards, and specifications.

2.04 *Highway Vehicles*
Conversion of engineering, safety, and environmental standards will be accomplished in coordination with technical societies, the National Highway Traffic Safety Administration, and the Environmental Protection Agency.

2.05 *Construction & Agricultural Equipment*
The development of metric engineering standards and the phase-out of redundant standards is a prime concern of the sector.

2.06 *Machinery*
The sector will facilitate coordination between manufacturers of components and capital equipment by identifying critical interface problems (e.g. motor flange dimensions). Conversion plans will be drafted for: 1) metalworking machinery; 2) special industry machinery; and 3) general industrial machinery.

2.07 *Power Generation*
The sector will develop recommendations for conversion of the Boiler and Pressure Vessel Code, and will survey suppliers to determine the availability of metric products and materials.

2.08 *Electrical Goods*
A standard (B258M) for recommended nominal metric sizes for solid round wires and stranded conductors has been prepared by ASTM with sector input. A conversion guide for electrical motors will be issued by the sector and will precede any change in standards.

2.09 *Electronic Equipment & Components*
The sector will determine laboratory capability for electronic testing in metric units. Conversion of the rack and panel standard and the 0.1 inch grid standard will be reviewed. Development of international standards for record sizes, loudspeakers, and cathode ray tubes will begin.

2.11 *Instruments*
The surveying of suppliers is a continuing project; updates are prepared semiannually.
The committee will determine critical issues (e.g. panel cut-out standards) and will act as a catalyst to expedite their resolution.

2.12 *Medical Devices*
Metric amendments to the Fair Packaging and Labelling Act and the Medical Device Amendments of 1976 will significantly affect sector planning.

Construction

The Construction Industries Coordinating Committee (CICC) is unique among the ANMC coordinating committees in that it is comprised of seven sectors, each representing a segment of the overall construction industry. Thus, the operation of each sector directly contributes to the progress of every other sector and the coordinating committee.

Each of the active sectors has developed a preliminary network diagram defining the activities to be accomplished in metric conversion. The network diagrams form the basis for monitoring the sectors' progress. When each activity on the network has been thoroughly analyzed and an estimated duration assigned to the activity, a plan showing estimated duration for the sector conversion can be produced. After that, the proclamation of SI (Start Implementation) Day as a calendar date will make it possible to develop an overall master conversion schedule for the entire industry.

It is toward this end that each of the construction sector's operations are directed for the period 1978-1980. By 1980, it is anticipated that the necessary decisions will have been made and the network diagrams completed.

3.01 *Design*
With ASTM adoption of NBS Technical Note 938 (Recommended Practice for the Use of Metric (SI) Units in Building Design and Construction), the sector will: 1) identify metric standards related to design; and 2) identify business activities affected by conversion.

3.02 *Codes & Standards*
The sector will: 1) develop guidelines for conversion of codes and standards; 2) establish conversion objectives for standards, model codes, legislation, and building regulations; and 3) develop procedures for rationalization.

3.03 *Construction Products*
The sector will: 1) identify measurement sensitive clauses in labor agreements; 2) facilitate development of metric scales and drawing instruments; 3) implement research on and development of metric product sizes; and 4) develop training aids.

3.04 *Contractors*
The sector will identify appropriate sector representatives and expand committee membership.

3.05 *Information (proposed)*
The sector is still in the planning stage. During 1978-1980, appropriate members and tasks will be identified.

3.06 *Real Estate*
This sector will follow, not lead, other sectors. The sector will continue work on a network diagram for conversion and monitor progress of "lead" construction sectors.

3.07 *Users*
The sector is currently being organized. Appropriate members and tasks will be identified during 1978-1980.

3.08 *Surveying & Mapping*
This sector will follow, not lead, other construction sectors. The sector will continue work on a network diagram for conversion, and identify resource requirements and markets affected by metrication.

Consumer Products

4.02 *Apparel*
The sector will promote a new body measurement study—a prerequisite to setting new metric size patterns. Soft conversion will continue. Conversion plans for thread, slide fasteners, and home sewing will be included in a comprehensive sector plan for eventual hard conversion.

4.03 *Weights & Measures*
The sector anticipates significant progress on the revision of laws, regulations, and handbooks. Plans for the modification/replacement of weights and measures equipment will be developed. The sector will also provide assistance to weights and measures officials in the revision of their enforcement activities.

4.04 *Packaging Advisory Committee*
The sector has been reorganized to perform in an advisory capacity to all sectors. For major issues, the committee will recommend that a subsector of the involved sector be developed, with 4.04 identifying names of appropriate representatives. For minor issues, 4.04 will probably appoint one of its own members to assist the sector in addressing the problem.

4.05 *Textiles*
A sector conversion plan, while considered premature by some companies, is expected to be finalized. Guidelines for data collection and retrieval will be issued. The sector will also brief sales and marketing personnel, and provide aid in other training activities. The fiber glass textiles industry will redefine nomenclature and measurement for all products in Tex and SI units.

New Sectors
The Consumer Products Coordinating Committee anticipates the establishment of new sectors for: cookware & housewares; home hardware; sporting goods; leathergoods; footware & luggage; jewelry; toys; home furnishings; and retail merchandising.

Education & Industrial Training

5.01 *Employee Training*
Sector will survey training needs among all sectors through liaison representatives appointed to each sector. The sector publication, *Metric Education Guide for Employee Training*, will be revised. A seminar for training officials will be conducted in early 1979.

5.03 *Educational Materials*
This sector will continue to monitor metric practice in educational materials, using the sector's *Metric Guide for Educational Materials* as a reference.

5.04 *Vocational Education*
The sector is still in the organization phase. Plans call for interaction and coordination with industry to determine curriculum and materials needs.

5.05 *Home Economics Education*
The sector is still in the organization phase. Plans call for the development of a style guide for metric recipes.

5.06 *Engineering Education*
The sector has recommended the use of SI metric system as the predominant language of measurement in all engineering and engineering technology courses by September 1978.

Food & Grocery Products

6.01 *Meat, Fowl & Fish*
Timing of transition will be linked to USDA and other consumer related sector plans.

6.02 *Dairy Products*
Initial sizing patterns for dairy products can be expected by 1979. Progress is anticipated in the current restrictions of federal and state regulations.

6.03 *Fresh Fruit and Vegetables*
Rationalization of pallet sizes may be achieved in the next two year period. Implications of Celsius temperature to this industry will continue to be assessed.

6.04 *Shelf Stable Foods*
Coordination of sizing and timing changes among product lines are planned along with revisions to the Fair Packaging & Labelling Act.

6.05 *Frozen Foods*
In 1978, the sector will survey sizing patterns and practices; decisions to hard or soft convert will be based on this survey. Special attention will be given to the conversion of the widely used 10-ounce package.

6.06 *Beverages*
Metric conversion of alcoholic beverages will be completed by 1980. Soft drink conversion is dependent on marketing and other considerations so that change is being introduced gradually.

6.07 *Non-Food*
The diverse packaging utilized will be reviewed to coordinate specific product line decisions in 1979.

6.08 *Retailers*

Sizing, dates and specific metric issues will be reviewed. Employee training schedules will be coordinated with industry conversion schedules.

6.09 *Food Service*
Sizing, dates and specific metric issues will be reviewed. Employee training schedules will be coordinated with industry conversion schedules.

1978-1980 Information Activities

ANMC's information program will continue to expand during 1978-1980 to meet the growing metric information needs of the private sector and the general public.

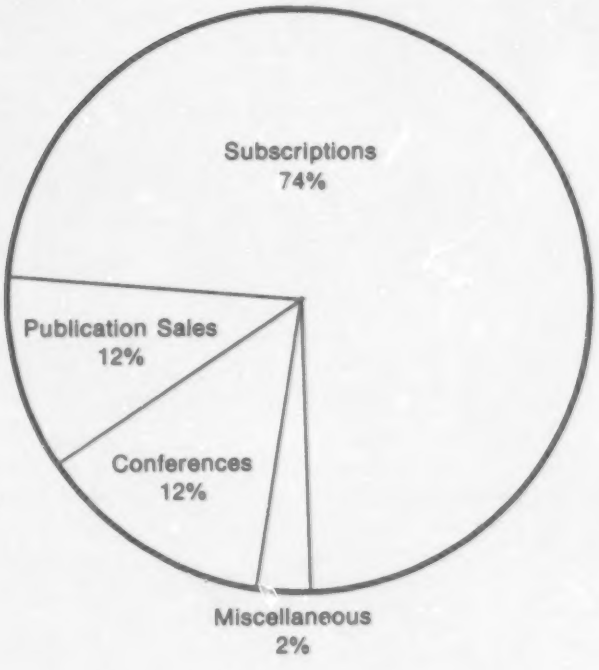
The *Metric Reporter* will place special emphasis on stories concerning the actions of the U.S. Metric Board, company planning and implementation, and standards activity.

The portfolio of special publications will be expanded in the next three years. Publications on EEC requirements, government regulations, packaging, and business systems are tentatively planned.

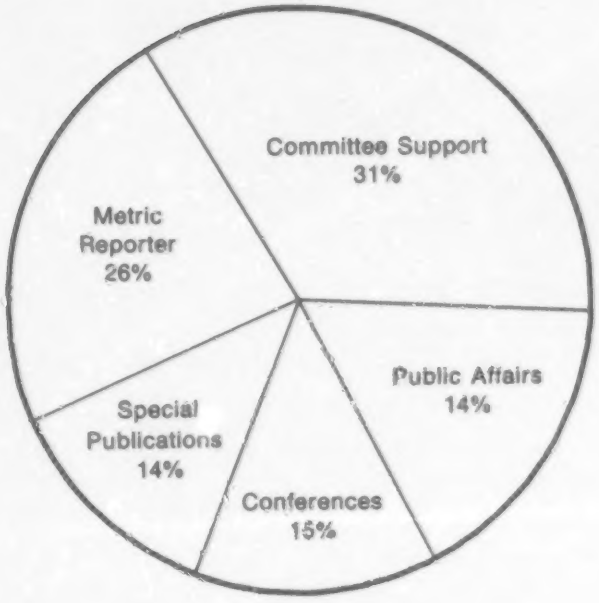
The annual conference will continue to be the cornerstone of ANMC's education program. The emphasis of the meeting, however, will be changed to make the conference a metric planning forum. The forum will be designed to permit full discussion of industry plans and problems on a sector-by-sector basis. Additional metric seminars and workshops will be conducted as needed.

1978 BUDGET

Income



Expenses



1978 Budget—$800 000

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Australian Metric Conversion Board
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Camp Pendelton
Canadian Department of Transportation
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Canadian Electrical Manufacturers Association
Canadian Gas Association
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Canadian Metric Commission
Canadian Telecommunications Carriers
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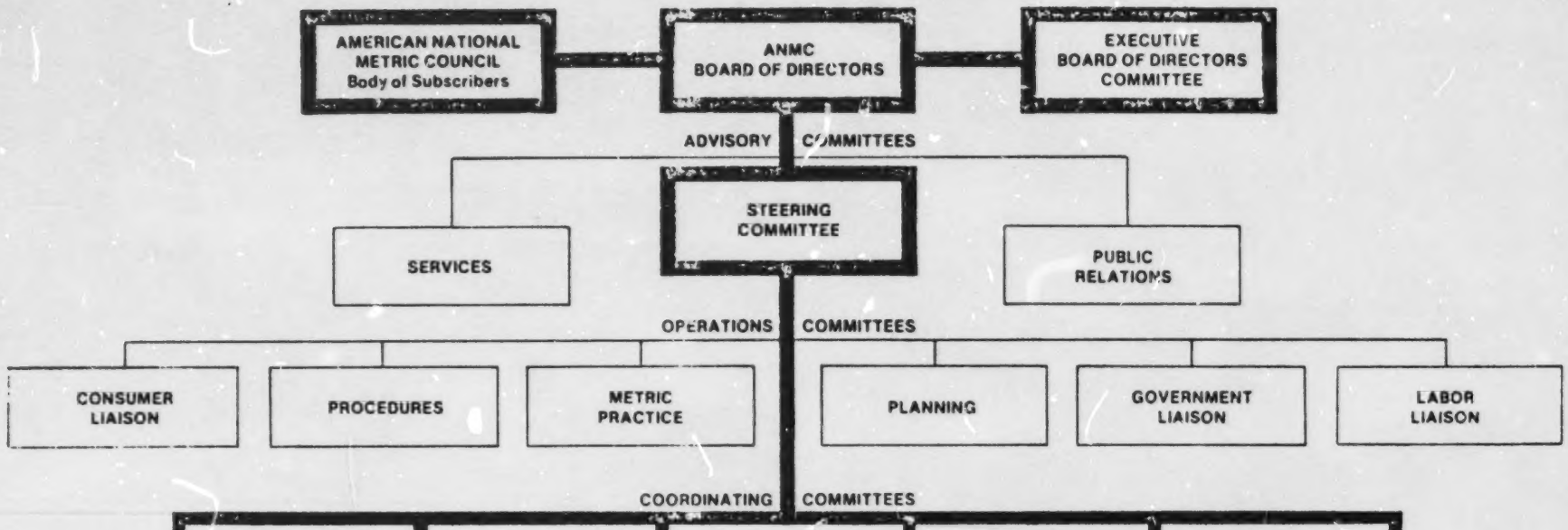
APPENDIX 3

ANMC PUBLICATIONS MISSING FROM DOCUMENT
PRIOR TO ITS BEING SHIPPED TO EDRS
FOR FILMING.

APPENDIX 4

ANMC ORGANIZATION CHART



APPENDIX 5

ADVISORY COMMITTEE

NIE GRANT NIE-G-78-0221

Metric Information Dissemination Project
for
Educators and Consumers

Ms. Barbara Beizer is a former member of ANMC's Consumer Liasion Committee and was involved with the joint Food Marketing Institute/ National Consumer Resource Center project "Metrics in the Supermarket". She has been on the staff of the National Consumer's Congress and the National Consumers League.

Mr. Joseph Caravella is Director of Professional Services for the National Council of Teachers of Mathematics. He serves on ANMC's Educational Materials Sector Committee.

Dr. Leonard Etlinger is a professor at Chicago State University in the Department of Curriculum and Instruction. He has been involved in numerous metric projects and grants.

Mr. Evan Johnston is the Director of the Northeast Metric Resource Center at the University of Massachusetts. He is active in the Northeast Regional Metric Action Council.

Mrs. Jane Keely is Vice Chairman of ANMC's Consumer Liaison Commitee, and until recently was the Director of Home Care and Appliances for Good Housekeeping Magazine and Institute. Mrs. Keely is active in the American Home Economics Associaton and the American National Standards Institute.

Ms. Martha A. Duggan, Project Director

Ms. Nancy C. Munley, Research Assistant

APPENDIX 6

MEDIA SURVEY ON METRIC COVERAGE

Please return by March 7th to:
Jane Keely
c/o Good Housekeeping
959 Eighth Avenue
New York, New York 10019

Have you included any metric information in your editorial pages or programming? _____ Yes _____ No. If not, do you plan to? _____ Yes _____ No. If yes, would you give us a brief description: (Include dates please)

Are you including metric measurements in any of your regular coverage, (such as weather, science, business reports)? _____ Yes _____ No. In what areas?

Please check sources of metric information you have used or plan to use:
_____ American National Metric Council, _____ Other metric associations/journals,
_____ government agencies, _____ educational institutions, _____ syndicated material,
_____ personal interviews, _____ publishers of metric educational materials,
_____ foreign sources, _____ other (specify).

Please list any specific sources you found particulary useful:

Is there any information or activity you feel is needed for better coverage?

What kind of reader/audience response have you noted from your metric coverage to date?

Can you give us a rough number of readers/audience you reach?

(Feel free to jot down any further comments on the reverse side.)

_____ Yes, send a copy of the summary to: Name _____

Title _____

Firm & Address _____

_____

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DAILY NEWS & FEATURES	DATA DANEWS
DINING OUT	DATA RESTGD
EDUCATION	DATA EDUCAT
ELECTRONIC MAIL	DATA ELMBOX
ENERGY SAVING NEWS & TIPS	DATA ENERGY
ENTERTAINMENT & SPECIAL EVENTS	DATA ENTSPE
FINANCIAL NEWS	DATA FINEWS
GAMES	DATA GAMES
HEALTH & FITNESS	DATA HEALTH
HOME ENTERTAINMENT	DATA HOMENT
NEW YORK TIMES - NEWS SUMMARY	DATA NYTNS
ORACLE-ASK ANY QUESTION ON ANY SUBJECT	DATA ORACLE
PERSONAL CALENDAR & NOTEBOOK	DATA PERSON
PERSONAL FINANCE	DATA PERSFI
REAL ESTATE (OPERATION UPROOT)	DATA REALAD
SCIENCE & ENGINEERING	DATA SCIENG
SHOPPING SERVICES	DATA BUCKS
SOCIAL & FASHION NEWS	DATA SOCFAS
SPORTS	DATA SPORTS
STARCAST-YOUR DAILY HOROSCOPE & BIORHYTHMS	DATA STARS
STRICTLY PERSONAL	DATA STIPER
SUGGESTION BOX	DATA SUGBOX
SYSTEM NEWS	DATA SYSNEW
TRAVEL CLUB	DATA TRAVEL
USER DIRECTORY	DATA USEDIR
VOICEGRAM	DATA VGRAMS
WEATHER	DATA WEATHR

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APPENDIX 9

INTERSTATE CONSORTIUM ON METRIC EDUCATION
OFFICIAL RECOMMENDATIONS

1) The Interstate Consortium on Metric Education (ICME) recommends that the International System of Units (SI) be the standard units of measurement used in all instructional programs.

2) The ICME recommends that for matters concerning definition of units, style, and spelling that the International System of Units (SI), as stated in the U.S. Department of Commerce publication NBS 330 and the American Society for Testing Materials publication E 380-72, be used in the preparation of instructional materials.

3) The ICME recommends that during the period of transition from the U.S. Customary system of measurement to the metric system of measurement that provision be made for the inclusion of metric materials commensurate with the achievement and maturity of the students. The scope should be sufficiently broad and sequenced in a manner to facilitate student development to a level of performance normally expected at appropriate (various) maturity levels.

4) The ICME recommends that instructional materials, to reflect a genuine concern for how and when children learn to measure, follow an appropriate sequence: (a) comparison between objects; (b) comparing nonstandard units with objects; (c) comparing objects to be measured with SI units; (d) choosing measurement units of appropriate size for specific tasks.

5) The ICME recommends that activity oriented measurement experiences for children be planned to include the following learning processes: language development, estimation and verification, simple matching and comparison, ordering, simple relations and mapping, and pictorial representations.

6) The ICME recommends that all prefixes in the range milli- to kilo- be presented to illustrate the logical structure of the

metric system. However, commonly used units should be emphasized in learning activities and applications are underlined below:

millimetre	millilitre	milligram
centimetre	centilitre	centigram
decimetre	decilitre	decigram
metre	litre	gram
dekametre	dekalitre	dekagram
hectometre	hectolitre	hectogram
kilometre	kilolitre	kilogram

Two commonly used terms which do not incorporate commonly used prefixes are "cubic decimetre" (dm3) and "hectare" (ha). The cubic decimetre should be used to show the relationship between linear measure and volume; the square kilometre and/or the hectare are used as the units for large land areas.

7) The ICME recommends that the recording of measurements within SI be accomplished in decimal notation.

8) The ICME recommends that the conversion process between the International System of Units (SI) and other systems of units be avoided. In disciplines in which conversion is presently relevant and required, appropriate information should be made available so that the use of conversion formulas will not be required.

9) The ICME recommends that in the pronunciation of metric prefixes the accent be placed on the first syllable.

10) The ICME recommends that effort be made to ensure that metrication be realized through integration of the International System of Units (SI) throughout the school curriculum and that the metric system not be presented as an isolated topic of study.

11) The ICME recommends that evaluative criteria for the adoption of instructional materials include the pertinent recommendations of the consortium.

12) The ICME recommends that metric-awareness programs for the public and intensive inservice programs for school personnel precede adoption of metric educational materials.

13) The ICME recommends that state educational agencies encourage teacher-education institutions to begin immediately to include opportunities for students to develop competencies in using and teaching the metric system.

14) The ICME recommends that by January 1, 1978, state educational agencies include in their evaluative criteria for adoption of instructional materials the pertinent recommendations of this report.

15) The ICME recommends that during the adoption cycle of the transition period that state educational agencies encourage local educational agencies to provide instructional materials to supplement textbooks that have little or no metric measurement content.

16) The ICME recommends that January 1, 1980 be the target date for the completion of the transition to the metric system in textbooks and other instructional materials; the ICME recognizes that certain vocational/technical timelines may be bound to related industrial conversion.

17) The ICME recommends that coordinated state efforts be made to inform and involve business, industry, and other organizations in the transition to SI metrics. A broad, multifaceted public-awareness program should be undertaken and should include but not be limited to the following:

- Publication of metric information in state-agency, teacher association, and other professional journals and publications
- Inclusion of metric sessions in the meetings of professional organizations
- Encouragement of television stations to present programs and public-service announcements about the metric system
- Encouragement of libraries and instructional material centers within the state to obtain metric related materials
- Establishment of communication channels to provide information about the metric system and assistance to local educational agencies in implementing public relations programs in metric education

- Encouragement of and assistance to local educational agencies in efforts to inform and involve parents in the transition to the metric system

18) The ICME recommends that state educational agencies encourage formative evaluation to determine proper placement for metric measurement activities.

19) The ICME recommends that preservice and/or inservice education programs be designed to prepare elementary teachers, administrators, and support personnel involved in instruction to implement measurement using metric units. The recommended program includes two areas of concern: (a) metric awareness; and (b) metric measurement experiences for teachers and aides.

20) The ICME recommends that preservice and/or inservice training programs for teachers at the secondary school level (grades seven through twelve) be designed to help these teachers become aware of the basic content and learning principles used in the elementary metric programs. In addition, secondary training programs should contain more concentrated, in-depth treatment of measurement for teachers in specialized areas. These specialized areas are: (a) vocational/technical education, including industrial arts, home economics, and related fields; and (b) mathematics and science.

21) The ICME recommends that state educational agencies provide leadership by developing a core of resource personnel whose responsibility will be to implement metric education programs at the local level.

22) The ICME recommends that measurement inservice programs for individuals directly involved in teaching measurement to students be of 10 to 16 hours duration. Introductory inservice programs of 3 to 6 hours duration on metric measurement should be designed for all individuals involved in instruction. In both programs, "hands-on" activities should be emphasized.

23) The ICME recommends that (a) mathematics and science teachers assume the major responsibility for teaching the metric system; and (b) teachers in all subject areas assume the responsibility for teaching applications of the metric system.

Interstate Consortium on Metric Education, Final Report, 1975.

APPENDIX 10

Professional Association or Group	Membership	Publication(s)
American Assocation for Higher Education	7 500 - 8 000	College and University Bulletin
American Association for Teacher Education	800 Institutions	
American Association of Community & Junior Colleges	1 000 - 1 100	Community and Junior College Journal
American Assocation of School Administrators	20 000	The School Administrator
American Association of Specialized Colleges	15 Institutions	Newsletter
American Association of State Colleges and Universities	325 - 350	AASCU Studies Memo: To President Proceedings to annual meeting
American Association of University Administrators	1 300	Communique
American Association of University Professors	75 000	Academe
American Association of Vocational Instructional Materials	50 State Departments of Education	
American Council on Education	450 - 500	Proceedings
American Council on Schools & Colleges	170 - 180	
American Federation of Teachers	450 000	American Teacher

Professional Association or Group	Membership	Publication(s)
American Library Association	35 000 - 36 000	American Libraries
		Booklist
		Choice
		Leads, A Fact Sheet
		School Media Quarterly
		Top of the News
		College & Research Libraries
American Personnel & Guidance Association	45 000	The Guidepost
		Personnel & Guidance Journal
American Vocational Association	54 000 - 55 000	American Vocational Journal
Association of American Colleges	627	Liberal Education
		Update
		Forum for Liberal Education
Association of American Universities	50 Universities	Newsletter
		Journal of Proceedings
Association of Career Training Schools	75 - 80	Career Training Bulletin
Association of College and Research Libraries	2 200 - 2 300	Choice
		College and Research Libraries

Professional Association or Group	Membership	Publication(s)
Association of College, Universities and Community Arts Administrators	465 Colleges	Bulletin
Association for Supervision and Curriculum Development	40 000	Educational Leadership
Committee on Institutional Cooperation	11 Universities	Annual Report to General Public
Cooperative Education Association	1 200	Journal of Cooperative Education Newsletter
Council for Advancement & Support of Education	1 900 - 2 000 Institutions	CASE Currents
Council for Basic Education	4 800	CBE Bulletin
Council for Educational Development & Research	15 - 20 companies	D & R Report
Distributive Education Clubs of America	160 000 - 175 000	The Distributor Dateline
Home Economics Education Association	2 700 - 2 800	Bulletin
Institute for Educational Leadership	5 000	
National Association of Independent Schools	800 - 825	Independent School
National Association State Directors of Vocational Education	125 - 150	

Professional Association or Group	Membership	Publication (s)
National Association of Textbook Administrators	25 - 30	
National Council of College Publications Advisors	600 - 650	College Press Review NCCPA Newsletter
National Council of Teacher of Mathematics	75 000	The Arithmetic Teacher The Journal for Research in Mathematics Education The Mathematics Student The Mathematics Teacher
National Education Association	1 400 000	NEA Reporter Todays Education
National Home Study Council	90 - 100	Directory of Accredited Home Study Schools NHSC News - NHSC Report
National School Boards Association	50 State School Boards	The American School Board Journal The Direct Link School Boards Updating School Board Policies
Society for Advancement of Education	1 800 - 2 000	Intellect